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### OBSERVATIONS ON JELLYFISH STINGINGS IN NORTH QUEENSLAND.

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In tropical waters around the northern coast of Australia, stings due to jellyfish are of greater variety and sometimes of greater potency than those reported from more temperate waters. In North Queensland waters, and along the coastline of the Northern Territory and Western Australia, marine stings have been the cause of severe constitutional effects and a series of sudden deaths. This possibility of serious sequelae, coupled with doubt on the identity of the causative organisms, has led to an unfortunate general apprehension towards all types of marine stings, even those of trivial nature. It is probable that unidentified noxious forms of jellyfish exist, in addition to the relatively few known stingers. Other forms, although identified and known to exist in these waters, may prove to have unrecognized stinging potential, perhaps only under certain specific conditions. It is already apparent that in different circumstances, or at different stages of development, a particular species may inflict stings varying greatly in severity.

This paper presents an account of the injuries which may be inflicted by two recognized stingers, *Physalia* and

Cubomedusae, and draws attention to the role played by a third organism, *Cyanea*, in the production of similar lesions. The jellyfish *Cyanea*, often recognized in Australian waters, but not previously regarded as an important stinger, causes injuries which may in the past have been attributed to the other two organisms. The characteristics of stings caused by these three organisms are the principal subject of this paper. It will be shown that the effects differ in significant particulars, and that these distinctions may form a basis for clinical differentiation.

The present investigation relates specifically to that section of the Queensland coast between latitudes 16° 17' south and 16° 57' south—that is, between Deception Point and Cape Kimberley. Within these limits lie the districts of Cairns and Mossman, and the waters of Trinity Bay.

#### PROBLEMS IN IDENTIFICATION.

The great initial difficulty in investigating marine stings is that the offending organism is rarely seen, and less often captured. Even when secured, the specimen may not be submitted to expert scrutiny, being described only by a popular name which may have different significance in other localities. For example, the terms "sea wasp", "blue-bottle" and "Portuguese man-of-war" have been used loosely in connexion with a variety of organisms whose only common denominator is the ability to sting. Popular names will therefore be avoided in this paper, except in initial linkage with the accepted zoological name.

#### Classification of Sting Types.

Failing positive identification of the stinging organism, certain characteristics of the sting may be used as a basis for classification. This approach was used by Southcott (1952) in reporting a series of marine stings in the Palm Cove area (latitude 16° 46' south, and within the area of the present investigation).

During the years 1943 and 1944, Palm Cove was a training area for troops. Southcott and Powys, who served as medical officers with an Australian Beach Group, observed "about 100" stings and noted that they were of two types. Type A consisted of stings without wealing, but with severe general effects. Type B was defined as stings with wealing, but without general effects.

Type A stings are in the Cairns area usually referred to as the "Irukandji sting", this name having been suggested by Flecker (1952) in an account of similar stings in the same general area. Irukandji is actually the tribal name of the aborigines who formerly inhabited that section of the coast in which this type of sting is most frequently encountered. The organism responsible for the Type A or Irukandji sting has not been identified.

Stings with wealing but without general effects (Southcott's Type B) may be produced by a variety of organisms, some of which under different circumstances may inflict stings to which this classification would not apply. In fact, there is evidence that the "Type B" stingers described in this paper do at times cause remote effects, sometimes of great severity. From a clinical viewpoint, however, the classification is valuable, and serves to describe the majority of stings recorded in this area.

Many jellyfish known to occur in northern waters are capable of provoking weal formation on human skin, and doubtless most of these contribute to the causation of Type B stings. However, three species assume dominant roles, and detailed consideration will be limited to these major stingers.

In 1944 Southcott, by experiment, showed that a *Cubomedusa* captured at Palm Cove produced wealing without general effects (Southcott, 1956). Two species of *Cubomedusa* are now known to be widely distributed in northern waters.

The presence of *Physalia*, a well-known cause of wealing without general effects, was demonstrated by Flecker (1945), and recent observations indicate that the Great Barrier Reef does not prevent *Physalia* from appearing in large numbers in northern inshore waters, where it certainly causes a proportion of Type B stings.

*Cyanea* also occurs in large numbers in these waters, and is now revealed as a significant cause of stings in which wealing is a major manifestation.

In describing these three organisms, attention will be given to the stinging equipment of each, to show how diverse skin lesions may be produced, and to indicate those characteristics which may assist in clinical differentiation.

#### Stings from *Physalia*.

*Physalia* (Figure 1A), sometimes called "Portuguese man-of-war" or "blue-bottle", floats upon the water like a little sausage-shaped blue balloon, to which submerged elements are attached. The latter consist of brightly-coloured finger-like processes, a few short fine tentacles, and one long, dark-blue "fishing" tentacle, which is the main stinging appendage. Although the minor tentacles are equipped with stinging capsules, they appear to play no significant part in human injuries.

Illustrations of *Physalia* usually show multiple fishing tentacles, which is true for the Atlantic form, *P. physalis*, but not for north Queensland specimens. The latter are the Pacific form, *P. utriculus* La Martinière 1787, which has but one main tentacle—a very long elastic and contractile thread, to which is attached a ribbon bearing on its free edge a series of bean-shaped nodes, which are aggregations of stinging capsules (nematocysts). Only in relaxed or extended tentacle is the ribbon fully dis-

played, revealing the "urticating buttons" as discrete entities. The extended tentacle of a medium-sized *Physalia* often exceeds eight feet in length. In contraction the muscular thread shortens to a few inches, and exerts a draw-string action on the less contractile ribbon, causing it first to ruffle, then to form a convoluted spiral about the thread. Tentacle in contraction thus presents a thickened pleated edge of compacted nematocysts, arranged in corkscrew fashion about the long axis. Degree of contraction therefore modifies the effect of *Physalia* stinging.

Extended tentacle produces a long, thin, linear injury. The line of application is comparatively straight and typically single, although it may be multiple on arms and legs should movements of the victim cause tentacle to wrap around the limb. Owing to lowered concentration of nematocysts, such stings are less intense than those from contracted tentacle, and may show a discontinuous line of weals representing the individual stinging nodes.

Contracted tentacle produces a wider injury, often irregularly linear with sudden angulations or replications. The latter result from free tentacle moving under the influence of water turbulence, after one section has become attached. Attachment is due to the anchoring effect of threads fired from those nematocysts in contact with skin.

Tentacle in full contraction causes severe localized lesions, not necessarily linear. Injuries of this type are seen on the fingers of children who lift the "pretty bubble" from the water.

*Physalia* stings may therefore be rather protean, but are subject to the limitations of a single tentacle. Thus one cannot hold *Physalia* responsible for a series of parallel weals, or for extensive discontinuous injuries at widely separated anatomical points. Occasionally one sees a *Physalia* stinging in which two tentacles appear to be involved, but these can be explained by the replication previously mentioned.

Experiments with *Physalia* tentacle on myself and friends produced variable effects. The usual injury was a discontinuous line of small papules, each with its small zone of erythema. Well-defined linear "welts" were produced by tension across convexities. Tentacle rolled across the skin caused scattered areas of punctate wealing and redness. Wealing was prompt, but rarely massive, and usually regressed within a few hours. Erythema was of longer duration, but had usually disappeared next day. Vesication did not occur, perhaps because the specimens were relatively small, or because tentacle was removed from the skin before it had exerted its maximal effect. (One hears of specimens of *Physalia* with "floats as big as footballs" in the Gulf of Carpentaria, but in the Cairns area the largest I have seen measured no more than 7 cm. in the long axis of the pneumatophore, or float, and most were smaller than a man's thumb.)

Pain was not severe after brief contact with tentacle. Longer contact caused more intense stinging, and in recent experiments tentacle application was limited to one minute, because of the excessive discomfort occasioned by prolonged contact.

#### Stings from *Cubomedusa*.

*Cubomedusa* are distinctively shaped, justifying the popular name "box jellies". Because of their stinging ability they have also been called "sea wasps". The body (bell) is cuboid, colourless and transparent, like a square glass bottle. In the water they are almost invisible and particularly elusive, in sharp contrast to most other jellyfish. Thus they are rarely detected by casual observers. Rapid movement is achieved by expulsion of a jet of water with each contraction of the hollow body, and sudden changes of direction result from muscular control of the shape of the jet orifice. By virtue of special sense organs they are sensitive to turbulence, and when disturbed move away at a speed approaching four knots. It seems certain that human injuries are the result of accidental contact, rather than of aggressive action.

Two species are found in this area, *Chironex fleckeri* Southcott 1956 and *Chiropsalmus quadrigatus* Haeckel 1879. Figure 1a serves to illustrate both species, external differences being difficult to detect. Specific identification is based upon the position and extent of the lateral gonads, which become visible only after suitable preservation. Whether the two species have a different toxic potential is not yet known.

Both species have four fleshy arms (pedalia) which divide into fingers (claws), each of which gives origin to one tentacle. The number and length of tentacles increase with the size of the jellyfish. Our largest specimen of *Chironex fleckeri*, slightly larger than a man's head, carried 15 tentacles on each pedallum, representing

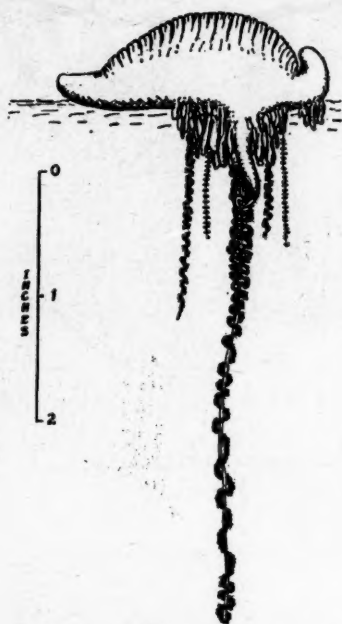


FIGURE 1A.  
Major stinging jellyfish in North  
Queensland: *Physalia utriculus* La  
Martinière 1787.

a total of more than 300 feet of trailing threads under normal (non-contracted) conditions. *Chiropsalmus quadrigatus* seems to attain a lesser size.

The tentacles are capable of relaxing or stretching to many times their usual length, or may be vigorously contracted into short, thickened, semi-rigid structures. As the axial contractile fibres are uniformly distributed about a central canal, twisting does not occur as the tentacle shortens.

In both species nematocysts are concentrated upon transverse ridges, which encircle the slightly flattened tubular tentacles, imparting a finely banded appearance. During tentacle contraction the rings of nematocysts approximate to form an undulating but continuous surface, which inflicts a wide uniform intense sting. Extended tentacle causes a milder and more slender weal, on which a pattern of transverse bars may be seen, corresponding to the separated rings of nematocysts.

Stinging capsules of small *Chironex fleckeri* and *Chiropsalmus quadrigatus* are incapable of penetrating adult skin of average thickness, but may cause weals on infants, and on thin adult skin such as that between the fingers.

At the stage when each pedallum carries six to eight tentacles (corresponding to a bell width of five to seven

centimetres), stinging ability exceeds that of *Physalia*, causing severe linear wealing. Such weals are characteristically multiple. A pattern of transverse lines may be visible, vesication is likely and the marks remain visible for some days.

Stings from large Cubomedusae (15 or more centimetres across the top of the bell) are extremely severe. During the first 15 minutes pain increases in mounting waves, despite removal of the tentacle. The victim may scream and become irrational. Areas of contact are linear and multiple, showing as purple or brown lines often compared to the marks made by a whip. A pattern of transverse bars is usually visible. Wealing is prompt and massive. Edema, erythema and vesication soon follow, and when these subside (after some ten days), patches of full-thickness skin necrosis are revealed. Healing is by granulation and cicatrization, taking a month or more, and leaving permanent scars perhaps with pigment changes.



FIGURE 1B.  
Major stinging jellyfish in North Queensland: *Chironex  
fleckeri* Southcott 1956.

In other zones along the Queensland coast sudden death has resulted from marine stings. Local lesions in such cases closely resemble Cubomedusan injuries, and Southcott and Kingston (1959) have shown that nematocysts remaining on the skin of two victims match those of *Chironex fleckeri* and *Chiropsalmus quadrigatus*.

Other evidence now in preparation for publication (Cleland and Southcott) indicates that Cubomedusae may be the major cause of death from marine stings. On the other hand, severe and extensive Cubomedusan injuries are not necessarily associated with general effects, these being entirely absent in the two major stings in the present series. Indeed, local belief is that there has been no death due to a marine sting in the waters of Trinity Bay, and if subsequent investigations support this belief, the possibility of modifying environmental factors must be considered.

#### Detection of Cyanea Stings.

In January, 1960, a batch of stings occurred in which the local lesions presented unusual features. The stung area, often extensive, was traversed by long narrow weals, sometimes very numerous and often with sharp angulations, but in general having a parallel distribution. A



narrow zone of bright pink erythema outlined each weal. Although victims were in pain and greatly alarmed, their distress was less than one might expect from such spectacular lesions, and of shorter duration. In some cases erythema persisted for three or more days, but wealing was transient, rarely lasting more than two hours. Vesication and skin necrosis were minimal, and usually confined to areas where weals had approximated or crossed.

*Physalia* obviously could not produce such multiple weals, and the effects were less severe than those from Cubomedusan injuries of similar magnitude.

At this time I was experimenting with a technique suggested by Dr. R. V. Southcott (personal communication), and was able to recover stinging capsules from the skin of two patients. The shape and internal organization of the principal tentacular nematocysts of a particular species are constant, and often differ widely from those of unrelated species. For example, *Physalia* nematocysts (Figure 11A) are spherical, while those of *Chironex fleckeri* and *Chiropsalmus quadrigatus* (Figure 11B) are cigar-shaped. Capsules from the new stings (Figure 11C) were superficially similar to those of the Cubomedusae, but smaller, proportionally stouter, and more rounded at the poles, resembling a sausage rather than a cigar. Also the "threads" in unexploded nematocysts were coiled in eight turns of a spiral about the longitudinal central tube. Such an arrangement is not found in the nematocyst spectrum of *Chironex fleckeri* or *Chiropsalmus quadrigatus*. The clinical distinction was therefore substantiated by this simple investigation.

During the same month an airline pilot reported numerous large jellyfish between the Barrier Reef and the mainland, and two fishermen complained of being stung on the fingers by "worms" which had become attached to their lines. One "worm" was preserved, and on microscopic examination was seen to be a length of tentacle, bearing nematocysts which matched those recovered from lesions caused by the unknown stinger. The large jellyfish reported by the pilot were suspected, but attempts to collect them in deep water failed, owing to the slippery nature of the jellyfish and their great size. In February the big jellyfish were blown inshore by south-east winds, and this event coincided with a further crop of stings. The tentacles of these jellyfish matched the fisherman's "worm", and the nematocysts of both had the same characteristics as those recovered from clinical stings. Experimental stings reproduced the effects previously seen on patients, and, finally, the actual medusa responsible for a sting was collected and submitted for examination. One of these jellyfish has since been identified by Dr. R. V. Southcott, Honorary Zoologist, South Australian Museum, as *Cyanea* species.

#### Stings from *Cyanea*.

*Cyanea* (Figure 1C) is a repulsive big slimy jellyfish, which local fishermen usually refer to as a "snotty". It bears a general resemblance to a mop hiding under a dinner-plate. The upper surface of the disc is circular, almost flat, roughened and of variable coloration. The edge of the disc is scalloped into 16 lappets. From the under-surface of the disc hangs a multitude of threads many feet in length. Those arising from central areas (the mouth arms) are fine, brownish-yellow in colour, and adhesive by virtue of a copious secretion of thick mucoid material. This secretion is responsible for the strong fishy odour which usually accompanies a victim. The tentacles are the thicker cords arising in eight groups near the margins of the under-surface.

A medium-sized *Cyanea* measures 10 in. (25 cm.) across the disc and carries more than 1000 tentacles, each over five feet in length when relaxed. The tentacles are capable of contraction, relaxation and stretching, the range in one experiment being eight inches to 20 feet. Such a massive armament is rarely seen on specimens captured in shallow water; in fact, such specimens are sometimes completely devoid of tentacle, and the majority have lost most of their filaments, of both types. Perhaps

this explains the contempt with which specimens of *Cyanea* are often handled. The tentacles are relatively friable and after separation retain their stinging ability.

Nematocyst grouping on the tentacles is in round clumps or "batteries", closely packed on contracted tentacle, but seen as detached islands when the tentacle is extended. The clumps are evenly spaced on the cylindrical surface, so that if stretched tentacle is laid across a glass slide the nematocysts form a pattern of

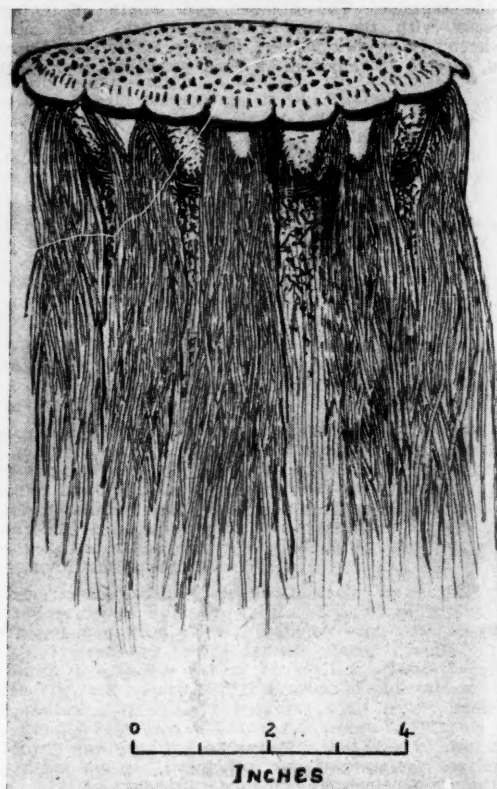


FIGURE 1C.

Major stinging jellyfish in North Queensland: *Cyanea* sp.

contact similar to that made by the teeth of a saw—a zig-zag of generally linear character. This zig-zag is sometimes apparent on clinically evident wealing.

Specimens examined this year varied little in size, but exhibited a range of colours. Some were a uniform milky white, except for the filaments. Others appeared identical except that the lappets were edged with brownish-black. A few had in addition black markings on the upper surface of the bell, in the form of small, irregularly-shaped random splotches. However, the great majority were a rich golden brown on the upper surface, and elsewhere an opaque greyish colour. Irrespective of the surface colours, the tentacles were water-clear and slightly greenish. Central appendages were opaque and varied in colour only between dirty white and brownish-yellow. Experiments indicated no marked variation between the stings inflicted by specimens of different coloration.

The first symptom of contact is a sticky sensation. If all tentacle is promptly removed, consequences are mild, consisting of a slowly developing burning sensation, erythema and punctate wealing. Contact maintained for one minute evokes the typical response of fairly severe burning pain, and a fine, stippled, linear weal bordered by a narrow red flare. The weal subsides rapidly, and



with it the pain, leaving a streak of bright red erythema. The latter may persist for days, providing a useful diagnostic aid.

Despite the multitude of tentacles on *Cyanea*, it is not unusual to see a single linear injury, which is perhaps due to a detached tentacle. Conversely, a number of tentacles may tangle to form a thick rope, and if this becomes attached it produces bizarre patterns and a local lesion of greater severity. Vesication and tissue destruction may occur, with consequent slow healing.

Evidence from other sources suggests that massive stings from *Cyanea* can cause profound systemic effects. Divers in Torres Strait describe a similar jellyfish which they consider highly dangerous. Wood (1874)

hand, matching nematocytes are not necessarily from the same species. For example, we are unable to distinguish between the main tentacular nematocysts of *Chironex fleckeri* and *Chiropsalmus quadrigatus*, and it is possible that nematocysts of other species would have identical characteristics.

Despite its limitations, nematocyst examination is a most valuable diagnostic aid. No other investigation offers so much useful information for so little effort. Reference to Figure II will show the value of nematocysts in distinguishing between *Physalia*, *Cyanea* and the two common local species of *Cubomedusæ*.<sup>1</sup> Collection of nematocysts is not difficult. Fragments of tentacle may be found on the skin or clothing of the victim, and

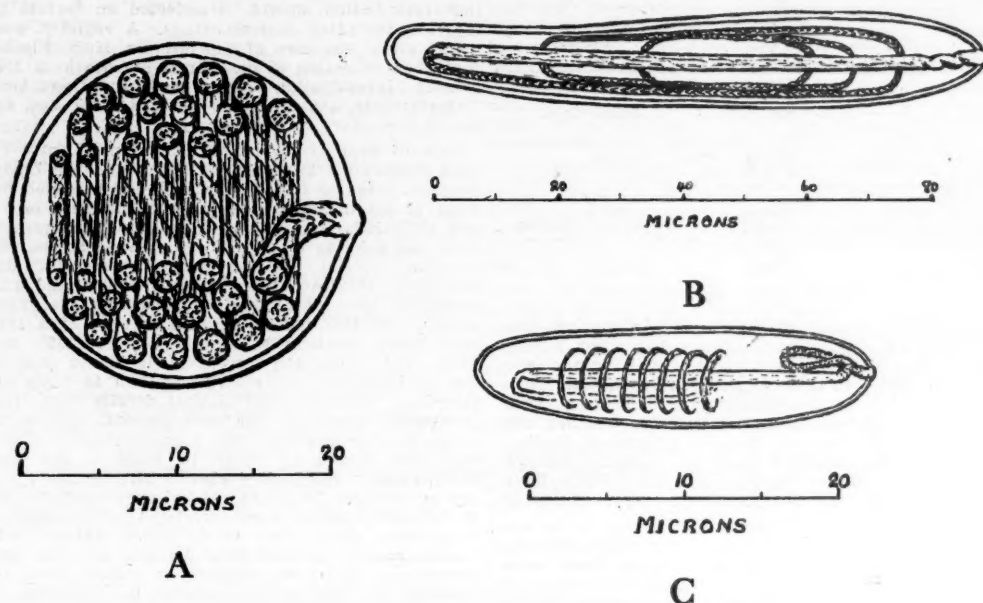


FIGURE II.

The principal tentacular nematocyst in various North Queensland jellyfish of medical importance: A. *Physalia utriculus*; B. *Chironex fleckeri* or *Chiropsalmus quadrigatus* Haeckel 1879; C. *Cyanea* sp.

and Batterham (1960), both quoted by Cleland and Southcott, describe severe general effects, apparently due to *Cyanea* stinging. General effects attributed to *Cyanea* in the present series were limited to nausea, backache and slight abdominal pain occurring in children exhibiting multiple but not extensive weals.

#### DIAGNOSIS.

Table I summarizes the more distinctive characteristics of weals caused by *Cubomedusæ*, *Physalia* and *Cyanea*, and compares intensity and duration of pain in stings of average severity. Weal characteristics are of greater diagnostic significance than pain or tissue reaction, the latter being subject to wide individual variation. However, the over-all clinical picture is often distinctive, permitting an immediate if tentative diagnosis.

In minor stings, and especially when tentacle contact has been transient, clinical differentiation is rarely possible from the skin lesions alone; but the subsequent development of typical systemic effects may warrant a confident diagnosis of Type A or Irakandji stinging.

The major weakness of clinical diagnosis lies in the possibility that organisms not yet investigated may produce similar lesions. Nematocyst study greatly narrows the differential diagnosis. If nematocysts recovered from a sting do not match any occurring on a suspected jellyfish, the latter is immediately exonerated. On the other

should be preserved. Tentacle moistened with salt water remains in good condition for many hours without preservative, and even after tentacle has dried or rotted the nematocysts are often found to be intact. "Slime" on the skin of the victim is rich in nematocysts. If a microscope slide is available, it should be applied directly to the slime, then set aside to dry. Alternatively, nematocysts can be scraped off with a knife, matchstick or similar object, and stored in a jar.

After an interval of many hours, and although the sting has been rubbed with sand or treated with lotions, a few nematocysts are usually still present, and may be recovered on a slide treated with a suitable adhesive. A smear of clear mucilage, almost dry, is simple and effective (Southcott, personal communication, 1960).

Factors such as locality, season and weather, or the known presence of certain stingers, may add circumstantial evidence in doubtful cases, and at times furnish the only available clue. Validity of interpretation of such data varies with the local knowledge of the assessor, and diagnoses based upon it must be regarded as speculative.

Capture of the offending organism provides the only unassailable evidence. The specimen should be preserved for expert identification. One part of *Liquor Formal-*

<sup>1</sup> A third species of *Cubomedusa* has recently been collected in these waters. Its clinical effects are as yet unknown.

dehydi B.P. (formalin) added to each 10 parts of sea-water is a simple and effective preservative.

#### SEASONAL INCIDENCE.

Although the peak incidence of stings occurs during the height of the summer swimming season, there is no parallel between beach attendances and stings. Table II shows that the "sting season" starts in November or December, although the local beaches draw large crowds from September onward. Stings during winter months are a rarity, and none occurred in the present series. The likelihood of stings is to some extent predictable.

TABLE I.

Characteristics of Diagnostic Significance in Stings of Average Severity from *Physalia*, *Chironex Fleckeri*, *Chiropsalmus Quadrigatus* and *Cyanea*.

Characteristics of Sting.	<i>Physalia</i> .	<i>Cubomedusae</i> .	<i>Cyanea</i> .
Weal:			
Type ..	Single or replicated line.	Multiple lines.	Multiple lines.
Width ..	Variable.	3 to 7 millimetres.	2 to 3 millimetres.
Pattern ..	Not regular.	Transverse bars.	Zig-zag.
Duration ..	1 to 4 hours.	2 to 24 hours.	† to 1 hour.
Pain:			
Type ..	Moderate.	Severe.	Burning.
Duration ..	† to 2 hours.	Many hours.	10 to 30 minutes.
Necrosis or vesication	Rare.	Usual.	Rare.

*Physalia*, of course, sails at the mercy of the wind, and is most likely to appear on local beaches after strong blows from the east or north-east. Such winds are exceptional in winter in these latitudes. *Physalia* stings are most numerous in December, with occasional cases during the later summer months. In calm weather the air-bladders (pneumatophores) may be recognized floating on the water, but in disturbed water the floats are difficult to detect, and are more readily seen after they have become stranded on the beach, at the upper limits of wetted sand.

*Cubomedusae* are mobile in their own right and can travel at a steady two knots, approaching the beach only under suitable conditions. A major factor determining their movements appears to be water turbulence, which they consistently avoid. Flat calm conditions occur usually in mid-summer, and on such occasions *Cubomedusae* may be very numerous in water only a few inches deep, very close to the shore. Even under such ideal conditions they are almost invisible, although the tentacles may be seen as mauve or yellow strings moving in the water. Calm weather is the time of greatest danger to small children, who should be kept out of the water until the shallows have been carefully inspected and tested, preferably by dragging a net. In the presence of a slight swell, *Cubomedusae* are more likely to be found to seaward of the breaking waves and at a greater depth. Persisting rough conditions usually confer freedom from *Cubomedusan* injuries, at least in shallow water. The highest incidence of these stings is in December, but specimens may be found in sheltered waters as late as March or April.

*Cyanea* is not a strong swimmer. Its pulsations serve to maintain an appropriate depth, and to right the jelly-fish if it is capsized, but for travel it depends on water movement. Between the Barrier Reef and the mainland, strong winds from seaward control the flow of inshore currents. Vast numbers of *Cyanea* are seen in deep water inside the Barrier Reef during January, February and March, and are driven inshore to invade rivers and beaches under the influence of south-easterly winds which follow the calms and variable northerlies of mid-summer. *Cyanea* may therefore be troublesome in late summer, after the weather has become less favourable for *Physalia*, *Chironex fleckeri* and *Chiropsalmus quadrigatus*.

#### RECORDS OF STINGINGS.

In 1935 a medical conference in Cairns recommended that information should be collected on certain types of injuries, including marine stings. A registry was established under the care of the late Dr. Hugo Flecker, who continued collection of data until his death in 1957. The present investigation commenced in December, 1958. Unfortunately Dr. Flecker's records were not available, and a new start was necessary.

Records kept by the Cairns Ambulance Centre (Queensland Ambulance Transport Brigade) and the Cairns Base Hospital revealed that 35 patients had attended for treatment of marine stings during the summers of 1956-1957 and 1957-1958. Accounts of these stings were in some cases too brief to be of real assistance. To overcome this problem, special "stinger forms" were introduced in December, 1958, and medical practitioners and ambulance personnel have cooperated in recording the information sought. By this means detailed records of a further 81 cases were obtained between December, 1958, and May, 1960. The apparently increased incidence was probably due to increased interest rather than to more numerous stings. Histories and clinical details were transferred to special cards, one for each patient, making the data accessible for analysis. The records clearly indicate that stings tended to occur in batches, and that each batch usually consisted of stings with substantially uniform characteristics. Thus clinical patterns emerged. Stings of doubtful aetiology were correlated with locality, weather conditions, stings due to identified agents and stings investigated by nematocyst study, and with the established presence of identified stingers on certain dates. By such methods it was often possible to establish tentative diagnoses in the doubtful cases, backed by a variable amount of circumstantial evidence. Many diagnoses are subject to the limitations previously discussed, but are presented as an indication of the relative incidence of the various types of stinging.

#### STATISTICS.

During the period from November, 1956, to May, 1960, 116 patients sought medical attention for marine stings. The stings were divided into Type A and Type B by methods previously described. Thirteen cases were excluded from the classification because of insufficient data.

Type A stings occurred in 44 cases, of which in 42 constitutional effects characteristic of Irukandji stinging were present. Two Type A cases presented special features, suggesting a different causation.

TABLE II.  
Seasonal Distribution of Stings.<sup>1</sup>

Season.	October.	November.	December.	January.	February.	March.	April.	Total.
1956-1957 .. .. .	—	2	13	3	0	1	0	19
1957-1958 .. .. .	0	7	5	4	0	0	0	16
1958-1959 .. .. .	0	0	22	13	2	1	0	38
1959-1960 .. .. .	0	2	23	16	1	1	0	43
Totals .. .. .	0	11	63	36	3	3	0	116

<sup>1</sup> No stings were recorded in other months.

The remaining 59 cases were of Type B—that is, stings with wealing but without severe constitutional effects. Causation was indefinite in 24 instances. *Physalia* was considered responsible for six stings, *Cubomedusa* for 13 and *Cyanea* for 16.

#### SUMMARY.

Stings in North Queensland waters are being investigated on a clinical basis, in correlation with field observations, experimental stings and nematocyst studies.

Approximately 40% of the stings reported in this paper were of the Irukandji type, in which severe general symptoms (abdominal pain, vomiting, backache and muscle spasm) follow an otherwise insignificant sting. This syndrome is attributed to a specific but as yet undetected organism.

Of the remaining stings, most were characterized by local lesions of varying severity, without remote or general effects. *Physalia*, *Chironex fleckeri* and *Chiropsalmus quadrigatus* have previously been associated with stings of this nature, but in the present series the jellyfish *Cyanea* played a major rôle, producing linear weals of a type not previously distinguished from weals caused by other organisms.

Lesions produced by *Physalia*, the two species of *Cubomedusa* and *Cyanea* differ in certain respects, and may exhibit characteristics of diagnostic significance.

Nematocysts are usually present on stung areas, and may be recovered by a simple technique. Microscopic examination of nematocysts is a valuable diagnostic aid.

#### ACKNOWLEDGEMENTS.

This investigation has been facilitated by the excellent cooperation of medical and ambulance personnel, field workers and patients, to all of whom I am grateful. In particular I wish to thank Mr. George Rowell for collecting specimens under dangerous conditions, and Dr. R. V. Southcott for identifying specimens and providing advice and encouragement throughout the investigation. Financial problems have been minimized by generous assistance from the Lions Club of Cairns.

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#### THE INCIDENCE OF DUPUYTREN'S CONTRACTURE.

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 Melbourne.

In 1832 Dupuytren presented his masterly demonstration that the ancient "apostle's hand" deformity was due to a retraction of the palmar aponeurosis. Since then many theories have been put forward to explain this change. However, more than a century of medical writing on this subject produced no explanation which has survived later investigation of the condition.

While the anatomy of the structural changes in Dupuytren's contracture has been well established, the cause of these changes remains unknown. The present

study was undertaken to determine the incidence of Dupuytren's contracture and the conditions which may determine its appearance.

#### Groups Selected for Study.

In the present study the selection of the population was planned to include different grades of manual activity, including labourers, clerks, healthy subjects with little scope for manual activity such as mental hospital patients and finally bed-ridden chronic invalids with little or no manual activity. Of the 3700 subjects examined, 1100 were in active employment and the remainder were either ill in hospital or resident in an institution. Two groups of the working male population were provided by 530 employees of a large brewery, and 550 clerical personnel employed by one of the armed services. In two mental institutions, 947 patients including 365 women were examined. In two general hospitals, 374 women and 616 men were examined, most of the men having been in bed for long periods with chronic medical conditions. In a special geriatric hospital, where all patients exceeded 60 years of age, 273 subjects were examined.

A further 356 patients, selected in groups as suffering from epilepsy, pulmonary tuberculosis, myocardial ischaemia, liver disease and alcoholism, were considered separately to determine if an association existed between any of these diseases and the presence of Dupuytren's contracture.

The subjects examined were considered in three age groups: 39 years and under; 40 to 59 years; 60 years and over. The age of those men in active employment was generally lower than those in the institutions, and allowance for this was made in comparing the results of the survey in each group.

#### Clinical Assessment of Hands.

A thickening in the palm fixed to the palmar fascia, either localized as a nodule or extending as a plaque or band to the fingers, was the only sign accepted for Dupuytren's contracture. Such a definition of the diagnosis of Dupuytren's contracture allowed the inclusion of early cases where no more than a small palmar nodule could be detected. This acceptance of the early changes of Dupuytren's contracture has produced a higher incidence than that reported by Adams (1892), who included only cases with finger flexion, and Lund (1941), who accepted skin puckering as the earliest sign of Dupuytren's contracture. These grosser signs of fascial retraction have been preceded by a less obvious palmar nodule. The acceptance of this palmar nodule as being the beginning of Dupuytren's contracture is considered to give a true index of the incidence of the disease.

In the assessment of hand deformity during the present survey, care was taken to exclude that due to tendon injury, scar contracture, congenital finger contracture and ulnar nerve palsy. In addition, two common clinical entities were encountered whose recognition was necessary to avoid their inclusion as Dupuytren's contracture. The first of these was in paralysed hands where the atrophy of palmar fat and intrinsic muscles had rendered prominent the bands of the palmar aponeurosis. The second group comprised those with a general tightness of the palmar fascia which could be misleading because passive extension of a finger would render its fascial extension palpable. This was not associated with any particular type of patient and was regarded as a variant of the normal aponeurotic tension in the palm.

#### Results.

The present survey has allowed an assessment of four factors in relation to the incidence of Dupuytren's contracture: age, sex, occupation and manual inactivity.

#### Age.

The rise in incidence of Dupuytren's contracture with increasing age is shown in Figure I. The percentage



incidence in each age group in this figure was probably higher than that in the normal population, as the figures from which the graph was compiled were weighted by the inclusion of many long-term chronic invalids. However, a progressive rise with age was found, rather than a peak of incidence at any particular age group.

As shown in Table I, the incidence in healthy men under 40 years of age was in the vicinity of 4% to 5%, and most of these subjects were in their fourth decade. In view of these figures, the condition cannot be regarded as rare in this sample of the population.

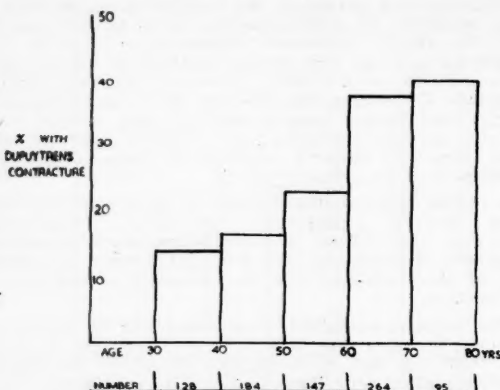


FIGURE 1.

The incidence of Dupuytren's contracture in a group of 818 men (616 chronic invalids and 202 mental patients), excluding chronic tuberculous patients and epileptics. The progressive rise in incidence with age is shown.

In patients over the age of 40 years, Dupuytren's contracture was found with increasing frequency in each decade, the evidence indicating that after 60 years almost one man in every four possesses a degree of palmar thickening sufficient to diagnose Dupuytren's contracture.

Thus the occurrence of Dupuytren's contracture accompanies the normal aging processes in the palmar tissues.

#### Sex.

Of the 834 women examined for all groups, more than one-third were aged 60 years or more. From Table I, it will be seen that no significant sex difference is present in the incidence of Dupuytren's contracture in subjects over 40 years. In the group aged 39 years and under, a 5.05% incidence was found in 594 males, and a 2.55% incidence in 157 females.

The present finding that Dupuytren's contracture occurs in women almost as frequently as in men is in keeping with the findings of Yost, Winters and Fett (1955), who examined over 5000 patients.

Previous estimates of an incidence in females of 10% to 20% of that in males (Kanavel, Koch and Mason, 1929) have been based on figures derived from operation statistics which do not give a true indication of the incidence in the general population.

#### Occupation.

Members of both the medical and legal professions have devoted much thought and argument to an endeavour to decide the role of occupational trauma in the production of Dupuytren's contracture. In order to determine the effect of occupation, the hands of 550 office workers and 530 brewery workers were examined. Reference to Table II shows no significant difference between the incidence in these two groups.

Of the 530 brewery workers, approximately half were involved in the heavy handling of bulk beer and the remainder in the less arduous handling of bottled beer, but the incidence of Dupuytren's contracture was found to be similar in these two groups. The absence of any difference in incidence between the group subjected to the traction on the palmar fascia involved in heavy lifting and the group subjected to pressure in the handling of bottles suggests that these two factors of traction and pressure are not significant. In these brewery workers callosities were frequently present on the hands, being located over the pressure points distal and proximal to the distal palmar crease; but when the nodule of Dupuytren's contracture appeared, it was often separate from these obvious pressure points.

TABLE I.

The Sex Distribution of Dupuytren's Contracture in Three Age Groups. No Significant Difference between the Sex Incidences is Apparent over the Age of 40 Years, but the Disease seems Less Frequent in Females in the Age Group Under 40 Years.

Age Group.	Total Number.	Dupuytren's Contracture.	
		Number.	Percentage.
39 years and under:			
Male .. .. .	594	30	5.05
Female .. .. .	157	4	2.55
40 to 59 years:			
Male .. .. .	816	143	17.52
Female .. .. .	441	70	15.88
60 years and over:			
Male .. .. .	241	55	22.80
Female .. .. .	236	53	22.46

The conclusion from this study, that the type of occupation does not significantly alter the incidence of Dupuytren's contracture, is in accord with the findings of Black (1915), who found no rise in incidence among mill workers, and the more recent study of Herzog (1951), who found a uniform incidence of between 4% and 5% among 1000 steel workers, 1000 miners and 1000 clerks, although it is unfortunate that these figures were not related to age groups. Another recent English study was that of Early (1959), who examined 5000 male employees of the locomotive works at Crewe and found no significant difference between the incidences in the office and manual workers and a rise to 15% in employees in their sixties. The higher incidence in the present survey is attributed to the inclusion of the earliest palmar changes.

#### Manual Inactivity.

The higher incidence of Dupuytren's contracture in patients who had spent a long term in hospital was influenced by the higher age groups found in these institutions. Here no retiring age of 60 or 65 years was operative to reduce the over-all incidence found in the employed classes.

From Table II it is seen that, compared with the sedentary and manual labouring groups, the incidence of Dupuytren's contracture was not raised in mental patients but was almost trebled in all age groups of the chronic invalids.

A factor common to these groups of patients was lack of manual activity. Most of the long-term hospital patients, incapacitated by chronic ailments, were confined to bed almost continuously and were restricted in their manual activity to holding books or eating utensils. Such patients frequently stated that the palmar change had first appeared, or a minor lesion had made considerable progress, during their period of enforced inactivity. In some subjects, confinement to bed for a few months had allowed an apparently normal hand to progress to a severe flexion deformity of one or more fingers.

In support of this association of manual inactivity with the occurrence and progress of Dupuytren's contracture is the finding of Plewes (1956) that "Sudeck's atrophy is nearly always accompanied by an alteration in the palmar fascia which may go on to a typical Dupuytren's contracture". In a series of 37 patients with Sudeck's atrophy, where the hand itself was initially injured in only five, all patients except one showed at some stage in treatment a thickening or

alcoholism or epilepsy, is significantly higher in all age groups than the percentage incidence in either healthy working men or mental hospital patients.

As a group the epileptics were noted to be less incapacitated and to pursue a more active existence than any other group here examined. This feature together with the much higher incidence of Dupuytren's contracture observed in these patients suggested their separate consideration.

TABLE II.

*The Incidence of Dupuytren's Contracture in Various Classes of Male Patients, The  $\chi^2$  test shows significant differences between the observed percentages in the various classes, although these become less marked with increasing age. Chronic bed patients, epileptics, chronic pulmonary tuberculosis patients and chronic alcoholics all show a higher incidence of Dupuytren's contracture than would be expected.*

Class.	Total Number.	Dupuytren's Contracture.			(O-E) <sup>a</sup> E
		Number.	Observed Percentage (O.)	Expected Percentage (E.)	
Males, 39 years and under:					
Office workers ..	180	7	3.89	7.76	1.93
Brewery workers ..	270	15	5.56	7.76	0.62
Mental patients ..	144	8	5.56	7.76	0.62
Chronic bed patients	126	15	11.90	7.76	2.19
Epileptics ..	21	9	42.86	7.76	158.86
Chronic pulmonary tuberculosis ..	23	3	13.04	7.76	3.59
Chronic alcoholics	9	3	33.33	7.76	84.20
Total..	773	60			$\chi^2=252.01^1$
Males, 40 to 59 years:					
Office workers ..	370	55	14.86	18.67	0.78
Brewery workers ..	260	33	12.69	18.67	1.91
Mental patients ..	186	30	16.13	18.67	0.29
Chronic bed patients	240	49	20.00	18.67	0.14
Epileptics ..	52	23	44.23	18.67	88.51
Chronic pulmonary tuberculosis ..	50	16	32.00	18.67	9.52
Myocardial patients	16	3	18.75	18.67	0.001
Liver disease (non-alcoholic) ..	15	3	20.00	18.67	0.14
Liver disease (alcoholic) ..	12	6	50.00	18.67	52.54
Chronic alcoholics	31	13	41.94	18.67	28.99
Total..	1237	231			$\chi^2=177.82^2$
Males, 60 years and over:					
Mental patients ..	241	55	22.82	36.35	5.04
Chronic bed patients	213	100	46.95	36.35	3.09
Geriatric unit ..	150	59	39.33	36.35	0.24
Chronic pulmonary tuberculosis ..	45	19	42.22	36.35	0.95
Myocardial patients	27	11	40.74	36.35	0.32
Chronic alcoholics	20	9	45.00	36.35	1.79
Total..	696	253			$\chi^2=11.43^3$

<sup>1</sup> At  $p=0.01$  and 6 degrees of freedom  $\chi^2=16.81$ .

<sup>2</sup> At  $p=0.01$  and 9 degrees of freedom  $\chi^2=21.67$ .

<sup>3</sup> At  $p=0.1$  and 5 degrees of freedom  $\chi^2=11.07$ .

contracture of the palmar fascia, and in every case in which established Dupuytren's contracture had been present before the onset of Sudeck's atrophy, the contracture progressed.

#### Incidence in Systemic Disease Groups.

Because of the relatively high incidence of Dupuytren's contracture demonstrated in this study, it is not surprising that a number of authors have claimed a causal relationship between the contracture and a number of other conditions. Table III illustrates that the percentage incidence of Dupuytren's contracture found in male patients who were long-term bed patients, or patients with chronic pulmonary tuberculosis, chronic

#### Epilepsy.

A total of 124 patients with epilepsy warranting admission to an institution were examined, and 44 were found to have evidence of Dupuytren's contracture. Of this group of patients 77 were male, and the percentage incidences found are shown in Table III. It will be seen that there is a highly significant difference between the incidences in epileptics and those in both mental hospital patients and the healthy workers in the same age groups. In particular, epileptic males under 40 years showed an eight-fold increase in incidence over mental hospital patients of the same age group. This difference is considered to be of aetiological significance because the mental hospital patients share with the epileptics a similar institutional life with a comparable degree of activity. Throughout this study the epileptics in the mental hospitals were recorded separately from the non-epileptics.

A total of 51 female epileptics were also examined, and of 17 patients under 40 years of age, 3 showed Dupuytren's contracture, and of 34 patients between 40 and 60 years of age, 10 showed Dupuytren's contracture.

Most of the 124 patients examined in this group retained normal hand activity, 82 being inmates of a colony for epileptics where many were occupied in the usual activities of farm work.

No correlation was made with the precise nature of the epilepsy in each case, but it is possible that the inheritance of an increased tendency to epileptic manifestations may be associated with the inheritance of a tendency to produce Dupuytren's contracture.

#### Chronic Pulmonary Tuberculosis, Chronic Alcoholism and Chronic Invalidism.

The significantly raised incidences of Dupuytren's contracture in these three groups of patients are shown in Table III. A similarly increased incidence in pulmonary tuberculosis was noted by Gordon (1954). It is of interest that this increased incidence in the present study was found in all age groups although the degree of significance decreased with increasing age (Table II). This latter trend was to be expected from the progressive rise in incidence with age demonstrated in Figure 1.

Most of the patients with pulmonary tuberculosis had lung changes regarded as incurable and had experienced long periods of enforced bed rest. Many were derelict personalities who, even when improved sufficiently to leave hospital, were notorious for early relapses brought about by alcoholic habits. These patients were not included in the 616 chronic invalids used in the first section of this paper but the incidence is similar.

Of 61 chronic alcoholics without laboratory evidence of liver insufficiency or chronic pulmonary tuberculosis, 13 were seen in a medical clinic and 48 in mental hospitals. Only one woman was examined, aged 42 years, and she showed the changes of Dupuytren's contracture. Of the 60 men, 25 had evidence of Dupuytren's contracture. The significance of the association of Dupuytren's contracture with chronic alcoholism is not apparent.

The possible association with decreased hand activity in long-term bed patients and the occurrence of Dupuytren's contracture has been mentioned earlier in this paper. The groups of patients with pulmonary tuberculosis and chronic alcoholism share with these chronic invalids this factor of decreased hand activity. The mechanism of this factor remains quite obscure.

TABLE III.

The Percentage Incidence of Dupuytren's Contracture in Male Subjects of Various Types. The Differences shown between Mental Patients on the one hand and Chronic Bed, Chronic Pulmonary Tuberculosis, Chronic Alcoholics and Epileptics on the other are Very Significant at All Age Levels.

Age Group.	Office and Brewery Workers.	Mental Patients.	Chronic Bed Patients.	Chronic Pulmonary Tuberculosis.	Chronic Alcoholics.	Epileptics.
39 years and under .. ..	4.89	5.56	11.90	13.04	33.33	42.86
40 to 59 years .. ..	17.52	16.13	20.00	32.00	41.94	44.23
60 years and over .. ..	—	22.80	49.05	42.22	45.00	—

### Myocardial and Liver Disease.

The suggestion was made by Powers (1933), Chitwood (1951) and Steinbrocker (1948) that myocardial ischaemia could lead to reflex changes in the upper limb and ultimately to Dupuytren's contracture.

In the present series there were 45 patients with myocardial disease proven by electrocardiogram, and 14 had Dupuytren's contracture, although in only one male aged 45 years was it moderately advanced.

Wolfe, Summerskill and Davidson (1956) reported a high incidence of Dupuytren's contracture (66%) in liver disease due to alcoholism, although they did not correlate the incidence with age.

In the present series 30 patients with chronic liver diseases unassociated with alcoholism were examined, and five were found to have Dupuytren's contracture. Of five women in this series none had palmar lesions. None of these patients was a hospital bed patient.

Of 21 patients with liver disease due to alcoholism eight had the changes of Dupuytren's contracture. One woman out of five between 40 and 60 years of age had Dupuytren's contracture. No man below 40 years of age was examined.

Both these series are too small to be significant, but there is inadequate evidence in the figures quoted to prove an association of myocardial disease or liver disease with Dupuytren's contracture.

### Conclusion.

The literature contains many attempts to demonstrate a causal relationship between Dupuytren's contracture and some specific disease. Much of the confusion arising from such attempts has been due to a lack of appreciation of the expected incidence of this condition in a group of subjects selected for comparison with due regard to similarity in age and activity. No definite association with any one disease is demonstrated in this paper, but rather there is a significant correlation with age, chronic ill health and epilepsy.

### Summary.

A survey was made of the incidence of Dupuytren's contracture in selected groups of the population.

A progressive rise with age was found, rather than a peak of incidence at any particular age group.

There was no significant difference between the incidence of Dupuytren's contracture in men and women except that it appeared lower in younger women than in men.

The incidence is not significantly different in heavy manual workers, sedentary office workers or mental hospital patients.

A significantly higher incidence was found in epileptics, chronic invalids, patients with chronic pulmonary tuberculosis and chronic alcoholics.

The decreased hand activity incidental to prolonged bed rest is suggested as a possible factor determining the appearance of Dupuytren's contracture in many of these patients. Some other factor possibly genetically linked must also operate to account for the high incidence in epilepsy.

### Acknowledgements.

In this survey many institutions have been visited, and everywhere the interest, generosity and cooperation of both the staff and patients have been a happy feature of this work.

Of the many colleagues who have given generously of interest and time, my greatest debt is to Dr. W. Beulke, formerly plastic surgery resident medical officer at the Repatriation General Hospital, Heidelberg, for his organizing ability in this lengthy survey, and to Dr. J. G. Mackenzie, M.Sc. (Melb.), for his help with the statistical analysis and interpretation of the results.

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### 6 (ALPHA-PHENOXYPROPIONAMIDO) PENICILLANIC ACID POTASSIUM SALT: STUDIES IN THE PÆDIATRIC AGE GROUP.

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FOLLOWING the isolation of 6 amino-penicillanic acid by Batchelor *et alii* (1959), an opportunity was afforded to synthesize new forms of penicillin. One of these, 6(alpha-phenoxypropionamido) penicillanic acid in the potassium salt form ("Broxil", Beecham Research Laboratories, Limited), is now commercially available.



Apart from the study of Knudsen and Rolinson (1959), there is little information regarding blood levels of this material, particularly in the paediatric age group.

Therefore a study was planned to evaluate the levels obtained in children, and the results are now presented.

#### Methods of Assay.

Serum concentrations of antibiotic were determined by a similar method to that used by Knudsen and Rolinson. *Sarcinia lutea* ATCC 9341 was used as the test organism, 0.65 ml. of an overnight broth culture of this organism being added to 65 c.cm. of "Oxoid" No. 2 nutrient agar, after cooling to 45°C. This mixture was then poured into culture plates to produce an approximate depth of 4 mm. Cylinders of agar were removed, 7 mm. in diameter, and the holes filled with solutions of standard "Broxil" concentrations and unknown serum dilutions. In each case serum and standards were diluted with solutions of 3% bovine plasma albumin fraction V in phosphate buffer at a pH of 7.0. Standard antibiotic concentrations were made of 1.0, 0.66, 0.50, 0.33, 0.25, and 0.10 µg. per millilitre and used on each agar plate. Standards were renewed after a maximal period of 10 days. The culture plates were incubated for 24 hours and the zones of translucency surrounding each hole measured. From this the area of the zone was calculated and the results plotted graphically; the concentrations of the unknown sera could be then estimated from the graph.

#### Experiment 1.

The patients studied consisted of 25 children (17 females and 8 males) drawn from the medical wards of the Adelaide Children's Hospital. Table I shows the age ranges of the patients. These were divided into three groups, viz., 5 to 12 years, 2 to 5 years, and less than 2 years. None of the children had been given any antibiotic for at least 48 hours previously, and all had adequate renal function at the time of testing. The dose was arbitrarily decided to be 250 mg. for children over 5 years and 125 mg. for children under this age. In Cases 22 to 25 different doses were given from the above regime as initially attempts were made to find the expected response in the infant age group.

All children received "Broxil" in the tablet form, the tablet being crushed for the smaller children and followed by an ounce of water or fruit juice. The difficulty in obtaining comparable conditions in children of different ages was partially overcome by ensuring that no food had been taken for at least one hour before testing was commenced. Venous blood specimens were collected at intervals of one, two, four and six hours after administra-

tion of the antibiotic. Any child who vomited or regurgitated after taking the drug or at any time during the period of blood sampling was discarded from the series. This was necessary on seven occasions.

TABLE I.  
Age Range Studied.

Age.	Number of Cases.	Percentage of Total Cases.
Less than 6 months	5	20
6 months to 1 year	1	4
1 to 3 years	4	16
3 to 5 years	6	24
5 to 7 years	2	8
7 to 9 years	3	12
9 to 11 years	3	12
11 to 12 years	1	4
Total	25	100

From Table II the results of this study are seen; it is evident that "Broxil" reached levels in the blood through all ages of childhood, from infancy to the school-aged child, which are comparable to those reported in adults given corresponding doses of this drug (Knudsen and Rolinson, 1959).

Figure 1 demonstrates that no relationship existed between the dose administered (as milligrammes per kilogram of body weight) and the serum levels obtained. A similar lack of correlation was found graphically between the dose per unit of surface area and the serum concentration. This finding was consistent with the results in adults reported by Knudsen and Rolinson, and with their contention that the only relationship between dose and serum levels obtained existed in an individual patient, in whom doubling the dose produced double the serum concentration.

Table III shows the mean figures and standard deviations of the serum concentrations of the individual groups. The magnitude of the standard deviation demonstrates the wide range of serum levels that the same dose of antibiotic will produce in patients of the same general status.

#### Experiment 2.

Three children who were to have a lumbar puncture as a diagnostic or progress examination were given 250 mg.

TABLE II.  
Serum Levels after a Single Dose of "Broxil".

Case Number.	Age (Years).	Weight (Kg.).	Dose (Mg.).	Dose (Mg./kg.).	Serum Concentrations (µg./ml.)			
					1 Hour.	2 Hours.	4 Hours.	6 Hours.
1	10.5	27.4	250	9.1	5.25	2.42	0.79	0.44
2	9.8	19.1	250	13.1	12.30	3.66	0.76	0.60
3	5.3	18.1	250	13.8	8.38	2.16	0.76	0.60
4	7.9	25.7	250	9.7	8.64	—	0.52	0.10
5	8.8	28.3	250	8.9	4.64	2.98	0.38	0.11
6	11.3	40.0	250	6.3	2.72	2.57	1.08	0.16
7	8.7	26.2	250	9.5	3.60	0.71	0.16	0.15
8	10.3	28.1	250	8.9	2.44	0.54	0.34	0.16
9	10.0	33.8	250	7.4	4.43	0.38	0.34	0.23
10	3.8	13.3	125	9.4	12.32	—	0.30	—
11	3.6	19.1	125	6.5	1.34	0.77	0.08	—
12	4.2	17.6	125	7.1	10.89	3.12	0.52	0.52
13	2.5	13.8	125	9.1	8.50	1.06	0.38	—
14	4.2	15.7	125	7.9	9.34	2.27	0.13	—
15	3.3	16.5	125	7.6	0.96	0.59	—	—
16	3.8	15.7	125	7.9	1.74	0.62	0.05	0.03
17	14.8	125	125	8.4	6.24	1.49	0.30	0.25
18	0.2	8.8	125	32.0	15.78	2.64	1.77	0.50
19	0.2	8.3	125	37.9	12.58	2.97	2.12	0.50
20	1.2	10.0	125	12.5	1.60	1.03	0.20	0.10
21	1.3	11.4	125	10.9	10.00	1.02	0.62	—
22	0.3	4.3	250	58.1	6.24	6.31	3.65	0.96
23	0.6	8.6	62.5	7.3	8.86	6.52	2.95	0.10
24	0.2	5.2	62.5	12.0	2.50	0.88	0.25	0.16
25	0.5	7.6	62.5	8.2	0.96	1.20	0.62	0.40

of "Broxil" one hour before the procedure. Specimens of cerebro-spinal fluid were assayed in a similar method to the serum specimens above. In no child could a detectable titre of antibiotic be found.

### Experiment 3.

Seven unselected primiparous pregnant women were given 500 mg. of "Broxil" during the second stage of labour at least one hour before the birth of the child.

Maternal blood samples and umbilical cord blood samples were collected at the time of birth.

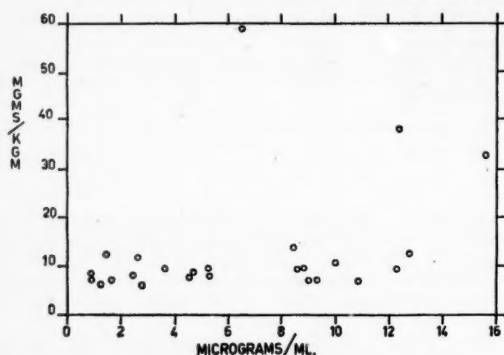


FIGURE 1.

Graphical representation of dose and serum levels. Dosage represented as milligrammes per kilogram of body weight, serum concentrations as microgrammes per millilitre after one hour.

Estimations of the serum concentrations were made as in the above experiments. Table IV shows the results. Free passage through the placenta occurred in all cases. The maternal serum concentrations were small, presumably because of the gastric atony frequently encountered during labour and the consequent delayed absorption of antibiotic.

TABLE III.  
Serum Levels of "Broxil" in Individual Age Groups.

Age Range (Years.)	Dose Given (Mg.)	Serum Levels. <sup>1</sup>			
		1 Hour.	2 Hours.	4 Hours.	6 Hours.
5 to 12	250	5.88 (±3.41)	1.92 (±1.22)	0.57 (±0.30)	0.29 (±0.20)
2 to 5	125	6.24 (±4.56)	1.41 (±0.95)	0.25 (±0.17)	0.27 (±0.23)
0 to 2	125	9.90 (±6.07)	1.92 (±1.03)	1.08 (±0.91)	0.37 (±0.23)

<sup>1</sup> Figures are mean concentrations in microgrammes per millilitre with standard deviations in parentheses.

### Discussion.

The serum levels reported in this series of children are comparable with those previously reported in adults given the same relative dose (Knudsen and Robinson, 1959).

Other forms of penicillin, e.g., penicillin V in similar dosage (Berlin and Brante, 1959), have not reached the same serum concentrations found with "Broxil" in adults and children. The inference that "Broxil" represents an advance in oral penicillin therapy seems valid.

In children the duration of measurable effect of a single dose is longer than that reported in adults either with penicillin V or with "Broxil", being detectable consistently for a period of six hours.

None of the children showed any harmful effect from single doses of the drug; previous reports on volunteers

have demonstrated, so far, freedom from toxicity or side effects (Kligman *et alii*, 1959).

The failure to demonstrate cerebro-spinal fluid levels in the absence of inflammation of the meninges is considered not to be of significance. The opportunity to repeat these studies in the presence of meningeal infection and with longer intervals between administration of the drug and collection of the cerebro-spinal fluid is necessary before any evaluation is made of the penetration of "Broxil" through the blood-brain barrier.

Transplacental spread, however, was demonstrated clearly in all seven cases studied. Estimations of amniotic fluid after surgical induction of labour are planned to confirm these findings.

This offers an easy way of supplying pre-natal antibiotic protection to the infant after such obstetrical complications as premature rupture of the membranes.

The delayed gastric absorption during labour is demonstrated by the low serum levels in the maternal blood, although in several cases more than two hours had elapsed before collection of the blood samples was made.

TABLE IV.  
Results of Transplacental Studies with "Broxil".

Case.	Dose (Mg.)	Maternal Serum Level (µg./ml.)	Umbilical Cord Serum Level (µg./ml.)
Mrs. S. ..	500	0.50	0.09
Mrs. M. ..	500	0.15	0.12
Mrs. C. ..	500	0.10	0.01
Mrs. E. ..	500	0.03	0.01
Mrs. B. ..	500	0.58	0.31
Mrs. H. ..	500	0.31	0.31
Mrs. J. ..	500	0.58	0.45

The search for an effective oral penicillin capable of at least reproducing the serum levels reached with penicillin G has even greater significance in paediatrics than in general medical practice.

Parenteral antibiotic therapy presents psychological and physical trauma to sick children that can be overcome only by oral therapy of equal efficacy. In this regard these preliminary studies hopefully indicate that, compared with penicillin V, "Broxil" represents a further advance towards this end.

The study conducted on bacterial sensitivity to "Broxil" (Garrod, 1960) has shown that this drug is effective *in vitro* in some staphylococcal infections resistant to the usual forms of penicillin.

This aspect of the potential value of "Broxil" therapeutically enhances the significance of the findings presented above.

### Summary.

Preliminary studies have been performed on a new synthetic form of penicillin, 6 (alpha-phenoxypropion-amido) penicillanic acid potassium salt, in children.

Serum levels compare favourably with those reported in similar dosage schedules in adults, both with this form of penicillin and with penicillin V.

No correlation could be demonstrated between dose and serum level obtained in relation either to weight or to surface area.

Cerebro-spinal fluid passage of the antibiotic was not found in three children, but transplacental spread freely occurred in seven pregnant women.

The benefits of this drug in paediatric practice have been briefly discussed.

### Acknowledgements.

We are indebted to Beecham Research Laboratories Ltd. for making available the supply of "Broxil" tablets used in this study.

## Addendum.

Three pregnant women were given 500 mg. of "Broxil" (BRL 152) one to two hours before surgical induction of labour. Blood and amniotic fluid specimens were collected during this procedure and concentrations of antibiotic estimated as in Experiment 3.

The results were analogous to those in placental transfer, and confirmed the passage of this drug from the maternal circulation, through the placenta.

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## CHANGING CONCEPTS IN THE TREATMENT OF TUBERCULOSIS. PART I.

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It is undoubtedly true that tuberculosis does not occupy the position it did twenty years ago. Diagnostic and therapeutic advances during this period have produced striking results which have caught the attention of the general public. It is unfortunate that the public attitude towards the disease and its victims has changed but little; fear still dictates the non-acceptability of ex-patients in most phases of activity. A recent survey has shown that most citizens harbour the wildest misconceptions on this subject, despite the intensive educational efforts of the various authorities.

Arising from fear, ignorance or hope, certain fallacies concerning the position have become widely current in the lay world, and because they contain a germ of fact, have gained some acceptance among the medical profession. Since the element of truth is in fact only germinal, these beliefs are dangerous, and I propose initially to discuss them and their relation to the present-day situation.

## Three Fallacies.

## 1. That Tuberculosis is "Beaten".

One hears quite frequently that tuberculosis is "beaten", and the suggestion that tuberculosis is no longer a significant disease is quite comforting. This is, unfortunately, far from the truth, for tuberculosis is still probably the most important of the infectious diseases. A glance at the schedule of notifiable diseases published in THE MEDICAL JOURNAL OF AUSTRALIA will show that at present something of the order of 80 new cases are notified each week throughout Australia. Other infections, for example, infective hepatitis, may seasonally displace tuberculosis from top place, but by and large over the twelve months with relatively little variation it maintains its position.

It is undeniable, of course, that the incidence is falling, but it remains as yet too high for satisfaction, as is shown in Table I. It is, I think, reasonable to accept notification figures during this period, as an indication of true incidence.

Though the decline has been quite marked, few would deny that a disease which produces more than a thousand new cases each year in this State cannot be regarded as "beaten". Moreover, this year there has been a disquieten-

ing and quite marked rise in notifications—during the first six months of 1960 a total of 771 new cases (674 pulmonary) have been notified. If this rate is maintained during the remaining half-year—and to date no significant change has been observed—the figure for 1960 will approximate that for 1957. Certainly our attitude on these grounds needs consideration.

## 2. That "Most New Patients are Found at an Early Stage".

It is a popular belief that public and professional awareness and the availability of aids to diagnosis, such as mass miniature radiography, are resulting in earlier diagnosis, and that extensive pulmonary disease is no longer found, except as a relative rarity.

TABLE I.  
Notifications of Tuberculosis in N.S.W.<sup>1</sup>

Year.	All Forms (Total.)	Pulmonary (Total.)
1954	2156	2038
1955	1909	1712
1956	1702	1534
1957	1649	1492
1958	1410	1245
1959	1166	1093

<sup>1</sup> Compiled from quarterly statistical returns of Tuberculosis Division, Department of Public Health, N.S.W.

Unfortunately, this too is incorrect. If we use the American (National Tuberculosis Association) terminology, which classifies pulmonary tuberculosis according to presence and size of cavities and the radiological extent of involvement, there has been no dramatic rise in the proportion of patients with minimal disease, as one would surely expect.

Over the period from 1954 to the present, the proportion of patients who are found to have moderately advanced or far advanced disease at the time of diagnosis has not fallen. It has remained at a fairly steady two-thirds of all pulmonary cases throughout these years, and in fact during the latter part of the period (1958-1959) it has risen slightly above that found in 1954-1956.

This would seem to point to a failure to recognize the earlier stages of pulmonary involvement. A further pointer is the fact that an undue number of patients are not even diagnosed as suffering from tuberculosis during life. Once again, over this seven-year period, there has been a slight but definite rise in the proportion of cases in which the first notification of tuberculosis has been the death certificate. This proportion now exceeds 8% of all notified cases, and of the 771 new cases during the period from January to June, 1960, no less than 59 were notified for the first time *post mortem*.

Has there been some failure of the diagnostic processes in these cases? Is complacency our problem—complacency on the part of patient, family or doctor? These are questions to which answers must be forthcoming.

## 3. That "Tuberculosis is now a Disease of Old Age".

Another well-publicized and equally erroneous conception is that "tuberculosis is now a disease of old age". Its danger lies in a too sanguine narrowing of the field of possibilities in contemplating a differential diagnosis, with an increase in the probability of error.

The notification figures reveal that new cases occur in all age groups, from infancy to extreme age. In males, most patients at the time of notification fall into the group aged 40 to 64 years, with the peak incidence at 45 to 50 years. The corresponding ages in females are about 15 years earlier, most disease occurring in the age group 25 to 49 years, with the peak at 30 to 35 years.

Most readers would resent the epithet of "old age" being applied to these groups. Since the average age of



the population has been rising steadily, and more and more not merely reach but surpass and far surpass the biblically-allotted three score years and ten, it must be agreed that tuberculosis is not a disease purely of interest to geriatricians.

A disease mainly of adults, yes, a disease of middle age, perhaps, but of old age, certainly it is not.

#### The Paradox.

This then brings us to the apparent paradox that, with more effective treatment available than at any time past, there are more patients than ever before. The reason of course lies in the fact that the most dramatic effect of antituberculosis chemotherapy has been the reduction of the death rate.

In 1954 some hundred or so in each million of the population of New South Wales died from pulmonary tuberculosis. At present the death rate is of the order of forty persons per million. In the days before chemotherapy the expectation of life for one newly diagnosed as having pulmonary tuberculosis was on the average less than two years. Nowadays such a one can confidently expect to live and, in most cases, to achieve almost the normal span, perhaps succumbing eventually to some condition totally unrelated to his disease.

The over-all result of this changed situation has been a considerable increase in the proportion of the population who have at some time or other had active pulmonary lesions and have been restored to at least some degree of normal activity.

Without reopening the hoary argument about endogenous or exogenous disease in the older patient, one must concede that these patients are liable to possible reactivation of their lesions, and that the ever-increasing proportion of the total population formed by such patients constitutes a problem that hitherto did not exist.

The long-term results of chemotherapy are not yet known, and in fact our ideas as to what comprises an "effective" régime have evolved greatly over the past decade, as Dr. Selby will demonstrate. The possible effect of these factors upon the epidemiology of the disease has yet to emerge, but it is certain that adequate supervision of such people must be available.

#### A New Problem.

It is important also to be aware of another hazard created by the life-saving properties of chemotherapy, which again did not exist in any significant degree in other decades. That is the hazard to the community of the therapeutic failure, by which is meant the patient whose lesions have been brought under a measure of control by therapy, but whose sputum still remains a source of infection. Many of these patients live for a considerable number of years perhaps with almost normal activity before the disease again progresses to the point of producing invalidism and eventually death, though some may fall to interim processes meantime.

Many but by no means all of these are what may be described as antisocial individuals—the alcoholics, the rolling stones—who do not accept advice, who leave hospital against their doctor's recommendation, who fail to attend clinics or private practitioners for follow-up, and who most certainly do not persevere with the antituberculosis drug treatment, particularly the unpleasant PAS.

The result is in many instances the emergence of strains of *Mycobacterium tuberculosis* resistant to one or more of the standard drugs. Contacts of those excreting such resistant bacilli run the grave risk of developing infection against which portion at least of our therapeutic armamentarium is of little or no use.

Such "primarily-resistant" infections have been encountered all over the world in varying proportion. British surveys suggest that upwards of 5% of all new cases fall into this category. Acceptable Australian figures are not available, and in this city experiences

vary considerably. Whereas Royal Prince Alfred Hospital has reported a considerable number of resistant infections, our experience at Sydney Hospital does not correspond at all, and at the Randwick Chest Hospital, where an undue number of these might be expected, only one definite case has been detected in the past two or three years. However, there is no doubt that the likelihood exists and must be faced.

In the past, the antisocial shared the over-all short expectation of life; now most will remain for years a potential and actual danger to their fellows. To the challenge of this new danger, which is common to all countries, no satisfactory answer has yet emerged.

#### Diagnosis.

Passing from epidemiological considerations, we come to some aspects of diagnosis which merit attention.

The value of routine mass miniature radiographic surveys needs stressing, and the continued support of the entire medical profession should be forthcoming, particularly at the present time when many of the public are apprehensive of the dangers of radiation exposure. Ill-considered and often inaccurate statements by those whose positions lend authority have been given publicly by Press, radio and television. This may be an important factor behind the sharp drop in attendances at mobile surveys.

Overseas assessments suggest that at least 95% of the local population should attend for a satisfactory coverage to be achieved. It has been shown quite clearly that a higher proportion of tuberculosis sufferers exists in those who refuse X-ray examination than in those who attend. Therefore the fact that recent surveys in the metropolitan area have reported attendances of the order of 60% of the possible number is of concern to all.

While practitioners would do well to encourage all their patients to seek regular X-ray examination, particular emphasis must be laid upon groups at special risk, exposed to untoward chance of infection, and to those groups who constitute undue risk to others, e.g., school teachers and others dealing with the public.

When one is confronted with clinical respiratory illness, three stages of diagnosis need to be emphasized. First, one should be aware that pulmonary tuberculosis is a possibility (not misled by the three fallacies already discussed). Second, one should be suspicious of any infection that does not follow the expected course or respond completely to what should be adequate treatment. Third, when awareness and suspicion lead to serious thoughts as to the possibility of a tuberculous aetiology, the subsequent investigations must be thorough.

A number of investigatory procedures are available, and though not all are diagnostic, the information provided may yet be valuable.

No radiological picture can be said to be diagnostic of tuberculosis, though some features, e.g., cavitation, may be extremely suggestive. Projections other than the postero-anterior may be most useful and should be employed more frequently. The anterior lordotic projection, lateral films and in some instances tomography may be helpful. In this respect too one would enter a plea that radiologists exercise caution in the wording of their reports, particularly where these may tend to blunt the awareness of the busy practitioner.

Again no hæmatological finding is diagnostic, though elevation of the erythrocyte sedimentation rate may point out the need for proceeding with investigations.

The bacteriologist naturally plays the most important rôle in clinching diagnosis. Once more three points spring to mind. First, the specimen submitted should be adequate, either sputum or, if none is available, fasting gastric contents. Do not be lightly brushed aside by the patient who denies being able to produce sputum. In some cases, if gastric intubation is refused or circumstances preclude it, laryngeal swabbing by the method of Nassau may be useful, but at least three swabs should be obtained on

each occasion. Second, should the answer not be found immediately, a number of specimens should be submitted; diligent search often is rewarding. Finally all specimens should be examined not merely by concentration methods (I would query the value of direct smear in most instances) but by culture. In certain hospitals it is the practice to culture only the last of a series of specimens should the findings from the earlier ones be negative on concentration. This procedure is condemned as time-wasting and inherently dangerous.

Histological procedures will be invoked but seldom; however, in the difficult case or unusual presentation they may be of great value. Scalene node biopsy or direct lung biopsy may help in the diagnosis of diffuse disease. A most useful diagnostic procedure which should be used more often is that of pleural biopsy in pleural effusion. This is a simple and straightforward technique, employing either a standard Vim-Silverman liver puncture needle or a specially designed instrument such as that of Abram; its value lies in the answer being available from the histologist in three or four days, whereas the bacteriologist using the aspirated fluid may require four or more weeks.

Finally, one should realize the necessity to repeat the above investigations should results be inconclusive. After diagnosis, when initial treatment has been given and a successful result achieved, an obligation rests upon the practitioner, whether he be a specialist physician or family doctor, to maintain supervision of his patient's future progress. Supervision must be long-continued, and probably in all cases could be maintained indefinitely with profit. It should be at regular intervals; and when an appointment is missed, a follow-up letter should be sent. However, the most important feature of supervision is that it should be adequate—it is certainly not sufficient to have a chest X-ray examination only, and a report of "chest—no change" does not preclude the need to look further. On each occasion, bacteriological investigation is essential by one of the methods outlined; occasionally surprises will be encountered.

One last point is that of notification. Tuberculosis is an infectious disease which the practitioner is required, under the provisions of the *Public Health Act*, to notify; there is no power of discretion. In New South Wales notification is required "on reasonable suspicion"; a final and complete diagnosis should not be awaited. Accurate notification enables the picture of the incidence and distribution of the disease to be assessed, the progress and effectiveness of our efforts gauged, and measures taken to identify sources of infection otherwise hidden and to trace contacts who may unwittingly harbour latent or progressive disease.

#### Prevention.

I do not propose to refer at length to the use of *Bacille Calmette-Guérin* (B.C.G.), whose value in my opinion has been demonstrated quite adequately. Nevertheless, under Australian conditions there is no need for its widespread use, and I believe it should be used to protect those exposed to risk greater than other members of the general population, e.g., in obviously exposed groups such as nurses and medical students. In others the value of retaining tuberculin-negativity for diagnostic purposes should be weighed against the possible danger of infection. It must be remembered that a positive result from a tuberculin test can yield information of value only when the patient's status at a previous date is known with certainty.

The newer vogue of chemoprophylaxis must be mentioned. This is based in large part upon the unique properties of isoniazid, which is potent taken by mouth, is acceptable to the patient, and by and large is non-toxic, and upon the observation that tubercle bacilli which become resistant to the drug are found to have reduced pathogenicity for certain animals. Unfortunately there is no irrefutable evidence that this happy state holds for man.

Advocates of isoniazid's employment as a preventive agent propose that it should be used in two ways—as

primary chemoprophylaxis, given for a period of up to twelve months to those exposed to a high risk of infection, and as secondary chemoprophylaxis, exhibited in those who have been found to be tuberculin-positive and are suspected of being likely to develop progressive disease. The report of the recent WHO Seminar which was published in the July 30, 1960, issue of *THE MEDICAL JOURNAL OF AUSTRALIA* recommended these uses. I would point out that the majority of those who attended, and who formulated those opinions, were from undeveloped countries, and that the conclusions do not necessarily apply to highly civilized western countries like our own. It is my firm conviction that primary chemoprophylaxis has no place in Australia; under such circumstances I would use B.C.G. As to its secondary use, the decision to treat must be made first, and that would depend on such factors as age (e.g., up to four years of age, during the time of greatest risk of miliary dissemination), nutrition, innate resistance, etc. Should treatment be thought advisable, under no circumstances would I recommend isoniazid alone; single-drug therapy cannot be justified, and a two-drug régime should be employed.

#### Rehabilitation.

A concluding thought ought to be given to rehabilitation, probably the weakest link in the tuberculosis control programme. While the orthopedists have captured public imagination in recent years, let it not be forgotten that tuberculosis physicians were pioneers in this field, e.g., Marcus Paterson at Frimley, and Varrier Jones at Papworth.

Rehabilitation starts at the moment of diagnosis, and in most patients has its only rôle in the field of maintaining morale, preserving self-confidence and encouraging a return to normal life. The majority of patients can and should return to their original occupation. Physical conditioning may be of value, with in some cases vocational training based on previous experience, to ensure a reasonable chance of employment, of adequate earnings and so on.

The greatest need is to help the older man, the unskilled factory-hand, the manual labourer, and the woman of middle age who has to support herself but has either not worked for years or is without special skill. It is difficult enough to find employment for the fit who fall into this group, while the tuberculous find it almost impossible.

Some few will need sheltered workshops, as provided by charitable organizations, such as the Citizens' T.B. League at Rozelle, but most could find a niche in industry.

The medical profession can help immensely by impressing upon employer and employee (and the greatest resistance often comes from workmates unwilling to accept a known tuberculous colleague) that the man or woman who has had tuberculosis, who has been treated, and whose return to work is approved medically, can be a useful worker and constitutes no undue risk to those who work with him. In this regard the ex-patient, adequately supervised by his doctor, is probably less of a danger than the workmate who neglects the precaution of having an annual chest X-ray examination.

#### CHANGING CONCEPTS IN THE TREATMENT OF TUBERCULOSIS. PART II.

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SIXTEEN YEARS have now passed since the discovery of streptomycin, which revolutionized our ideas regarding the management of tuberculosis. In quick succession para-aminosalicylic acid (PAS) in 1946 and isonicotinic acid hydrazide (INH) in 1951 were added to our drug armamentarium, and by 1953 all three drugs were well known and fairly widely used.

Experience has grown concerning the optimum use of these drugs, but our views have been changing continuously and it is now timely to review advances that have taken place during the past eight years. A great number of controlled clinical trials have been conducted during this interval and it is only now that sufficient time has elapsed to allow evaluation of various drug regimens.

Our present therapeutic régime can be considered under three major headings: (i) general care, including hospitalization and bed rest; (ii) drug therapy, (iii) surgery.

#### General Care.

Late in the nineteenth century the diagnosis of the disease was well established with the discovery of the *Mycobacterium* and of X rays, but the only therapeutic measure available at the time was an attempt to increase the patient's resistance against the infection. This consisted of prolonged rest, good food and fresh air—in other words, the so-called "nature's cure". These considerations are just as important today as they were a century ago, but the emphasis has shifted, as they are not the only means available for treatment.

In the pre-chemotherapy era and even up to 1950 all new patients were hospitalized and treated with strict bed rest. We are much more liberal today and consider each individual patient separately.

There are two facets to this problem: one is a public health matter concerning the patient's infectivity to the rest of the community, and the other is the problem of getting the patient back to normal in the shortest possible time.

In view of the fact that our present treatment does not quickly eradicate the disease, at some stage of therapy the patient will have to be treated at home and allowed to return to work. Obviously it would be preferable to hospitalize all new patients, but this is not always feasible, and much depends on infectivity, home conditions and the nature of contacts in influencing our decision regarding immediate admission to hospital.

There is no question, of course, about the sick patient or the one with advanced disease. In minimal or moderate cases ambulant chemotherapy is often instituted, especially if there is no risk of spreading the infection and the patient himself is symptom-free. However, even in such cases, initial hospitalization would be preferable in order to obtain sensitivity tests, to establish drug therapy and to educate the patient about his disease.

Compared with the position in 1953 we have become, on the whole, much less rigid in this respect, although many claim that this is not a development in the right direction. In its favour, on the other hand, recent controlled studies have been published from Africa and India, comparing the treatment of tuberculosis of varying severity in hospital and at home. No appreciable difference was found at the end of 12 months in either sputum conversion or X-ray clearance between the two groups, despite the fact that home conditions were not as favourable regarding the availability of food or of drug administration as in hospital.

Closely connected with and thought to be in favour of early hospitalization is its advantage of providing controlled bed rest. Laennec first announced the principle of complete bed rest in the treatment of tuberculosis, and in the pre-chemotherapy era it was certainly the most effective measure available. It was thought that general rest allowed the patient to increase his resistance against the tubercle bacillus, although all it probably achieved was to prevent the spread of the infection to the neighbouring unaffected lung. Advocates of vigorous activity have come forward at intervals, but the idea always faded into oblivion because of increased morbidity and mortality.

No controlled studies were therefore possible until the introduction of chemotherapy, and even so, it is only during the last couple of years that such studies have been published. Russell and Wier, in Denver, have

independently shown that there was no difference in the healing process between patients on the same chemotherapy régime when one half were kept at strict bed rest and the other half were allowed up as long as they liked. They argue that drugs will have a better effect against multiplying, metabolically active bacilli, which tend to become dormant and less responsive during bed rest. In all but far advanced cases these workers would allow as much freedom as patients liked, with only two short periods of bed rest a day.

These studies, together with experience gained from defaulters who have discharged themselves from hospital against medical advice, explain the radical changes in our views on the necessity of prolonged bed rest and institutional care. Most workers agree that whilst toxic phenomena persist, bed rest is beneficial; thereafter, quick upgrading with discharge to a convalescent home appears to improve morale and, if anything, speeds up the healing process. On the whole, the periods of both hospitalization and enforced bed rest have been more than halved in the last eight years, and in many cases patients with minimal, non-infective lesions are allowed to continue work, provided they have a sedentary occupation and can stay off their feet for about twelve hours a day.

#### Drug Therapy.

Ehrlich's vision of the "magic bullet" therapy began to come true with the discovery of the sulphonamides in 1935. Although the sulphones were found to have some anti-tuberculous action, no real advances in this field were made until the discovery of streptomycin in 1944. It was soon discovered, however, that streptomycin lost its effect in many cases because of the emergence of resistant bacilli.

By 1953 combined drug therapy was well established, in order to avoid resistance and also to reduce toxic side effects. Streptomycin was still considered the mainstay of therapy and was given in rather high dosage.

Today we realize that INH is the most valuable drug we possess; it is the least toxic and penetrates widely into cavities, cells and the cerebro-spinal fluid, and also enhances the reepithelialization of lung cavities. It should be included in the initial phase of chemotherapy in all new cases, to give the patient maximum benefit from the outset.

Controlled trials have shown that in routine use there is no advantage in triple drug therapy over the more generally used combination of two drugs. This does not apply to retreatment cases, and recently an increasing number of new patients have been found to harbour resistant bacilli to one or more of the three major anti-tuberculous drugs (2% to 8%). As a result, triple chemotherapy is instituted in many centres on diagnosis until the results of sensitivity tests become available. The aim is to avoid the risk of administering an already ineffective drug and thereby allowing the emergence of strains resistant to the second one too.

The commonly used drug combinations are INH and streptomycin or INH and PAS. The emphasis lies on INH as the main drug, in association with a companion drug which must be given daily, as intermittent therapy has been found to increase the emergence of resistant strains. Daily administration of streptomycin is feasible only in hospital, and it is fairly risky in the elderly or in the presence of renal impairment, because of its ototoxic side effects. We are therefore left with daily administered INH and PAS as the most frequently used combination. Controlled trials have amply shown that this combination is quite as effective as any other, its only disadvantage being the risk that patients will not take their PAS regularly when outside hospital. Urine tests with ferric chloride or the recently introduced "Phenistix" have shown that a large percentage of patients omit taking their drugs regularly, and it behoves the attending physician to explain carefully the risk of such behaviour to these patients.

As to the dosages most commonly employed, INH is given in a dose of 4 to 5 mg./kg./day, i.e. 300 mg./day



for an average-sized adult. Recently, however, a number of patients have been found (15%) who destroy INH in their liver by acetylation, when much smaller quantities are excreted in the urine. In such cases a higher dosage is recommended (Kass *et al*), consisting of 10 to 16 mg./kg./day or up to 900 mg./day. At such high dosage the danger of peripheral neuritis is quite real, and the addition of pyridoxine 50 to 100 mg. is thought to provide adequate protection, although some workers claim that pyridoxine itself antagonizes the action of INH. Moreover, in routine cases the use of high INH dosage has been shown to have no advantage over the standard 300 mg. régime.

The previously high PAS dosage of 16 to 20 grammes per day has gradually been reduced to 10 to 12 grammes per day. It seems to enhance INH activity, possibly by blocking its destruction in the liver. Unfortunately, its administration causes frequent gastro-intestinal upset, and many people are unable to tolerate it in any form. The position is made even more difficult by the discovery that a number of newer PAS preparations and combined PAS and INH cachets, manufactured in the hope of avoiding toxic effects, were found to be ineffective in preventing the emergence of resistant strains. Quite recently, the administration of one daily dose of 6 grammes was introduced; this seems to be quite as effective as the larger doses and produces fewer toxic effects.

Although experience has grown tremendously regarding drug combination and dosage, the hope of completely avoiding the development of resistant strains did not materialize. This is still a major bugbear of chemotherapy, although the study of drug action and microbial metabolism may eventually lead to the solution of the problem. It has already been discovered that resistance to streptomycin does not change the property of the bacilli. INH-resistant organisms, on the other hand, show diminished pathogenicity to guinea-pigs, associated with a loss of their ability to produce the enzyme catalase. The problem remains, however, whether these bacilli have a truly diminished pathogenicity towards humans as well.

It is in such complicated and resistant cases that the need arose for alternative drugs, and quite a number have been discovered over the last few years. Amongst them the best known are cycloserine, viomycin, streptovaricin, kanamycin, thiocarbanidin and pyrazinamide.

Cycloserine, in a dosage of 500 to 1000 mg./day, on its own was found to be rather ineffective, although combined with INH it is only a little less potent than other drug combinations. Side effects involving the central nervous system, and especially convulsions, provide its main drawback.

Viomycin was found to be highly toxic to the kidneys when used extensively, but a reduced dosage of 2 grammes twice a week is reasonably free from toxicity.

Streptovaricin and kanamycin have already been abandoned, and there is as yet too little experience available regarding thiocarbanidin. Pyrazinamide combined with INH would seem to have the best tuberculostatic effect, and this combination was shown actually to eradicate experimental tuberculous infection in mice. It is highly toxic, however, mainly to the liver, although in smaller doses of 1.5 to 3 grammes per day hepatotoxicity appears to be reduced and can be detected by serial transaminase determinations.

It is obvious, therefore, that these newer alternative drugs are all highly toxic and not as effective as the standard ones. Their administration is limited to short courses and should be reserved for the treatment of resistant infections, in patients with open cavities, emerging after a trial of standard therapy. They are used in combination with INH, or sometimes two new drugs are tried for a short period prior to surgery.

Whereas in 1948 drug therapy was given for four to six weeks only in order to avoid the emergence of resistant strains, by 1953 the length of treatment had increased to about a year. The aim of chemotherapy is to

reach the so-called target point, defined as sputum conversion, cavity closure and X-ray stability. Today, an adequate course is thought to consist of daily combined drug therapy for at least twelve months after reaching target point, i.e. a total of 18 to 24 months of chemotherapy. More recently, indefinite continuation of drugs has been suggested, in order to prevent relapse at a later date. This is the new concept of chemoprophylaxis suggested by the Americans, utilizing INH alone, and is still a hotly debated question.

Although it is thought that INH may ensure freedom from relapse and even eventually lead to eradication of the infective pool, one has to consider the risk of spreading INH-resistant bacilli to new subjects. Such infections, especially if involving the meninges, are highly lethal. The same argument applies to the suggestion of using INH alone in the treatment of minimal infections.

#### Surgery.

It is common to find today that sputum conversion and cavity closure occur after three to six months' adequate chemotherapy. Occasionally, however, an open cavity may persist with either "positive" or "negative" sputum. It is in these cases, and also when relapse occurs during chemotherapy, that surgery has to be contemplated.

There are two types of surgical approach in tuberculosis: collapse therapy, temporary or permanent, and resection.

Collapse therapy was introduced in the treatment of tuberculosis late in the nineteenth century, representing the application of the old medical principle of resting the diseased part. For more than five decades it was the only truly positive therapeutic measure available, and therefore it was often used to excess. However, thoracoplasty, pneumothorax and pneumoperitoneum were all used with quite a degree of success. On the other hand, resection was fraught with the danger of serious complications, such as fistula formation or empyema, and was used only as an heroic measure.

The advent of chemotherapy radically changed the picture, and by 1953 collapse therapy had lost favour with many chest physicians. At the same time the direct attack on many tuberculous lungs became less dangerous, and by 1953 a great number of resections were being performed. Advanced destructive disease of one lung, tuberculous bronchiectasis and bronchial stenosis, persistent open cavities and localized fibro-caseous lesions were considered absolute indications for resection. At this stage enthusiasm for wide resection was at its height, and many other lesions which did not respond quickly to chemotherapy were also removed. It was then that a number of persistent cavities associated with negative sputum findings were resected, and experience grew regarding their nature. Many appeared to be cystic, thin-walled cavities, although often some tuberculous tissue was found in their walls. The principle at the time was to give chemotherapy and to watch progress for a short period, and then to decide on surgery, which tended to be rather extensive. The results were good, and post-surgical relapse rates were low, but all the same the pendulum is now swinging away again.

Indications for surgery are still similar, although few surgeons would now hurry to remove open cavities in sputum-negative patients, or rather slowly responding lesions. Experience has taught us that prolonged chemotherapy will usually lead to almost complete healing or occasional residual cyst formation.

With the lengthening of drug administration, less and less surgical intervention is performed today. Temporary collapse therapy has been completely abandoned in most centres, and thoracoplasty is also much less frequently used, mainly in cases in which lung function is grossly impaired and resection is impracticable. Smaller persistent lesions come to surgery now, often because of the emergence of resistant strains. In such cases lobectomy is more frequently performed, as there is a real danger

of spilling bacilli onto healthy lung during less extensive procedures. The wider pneumonectomies are reserved for destructive lung lesions, which are also much less common today. On the whole, lobectomy is now the most frequently performed surgical procedure, whereas pneumonectomies and segmentectomies were favoured in 1953.

It is noticeable that, whereas previously surgical intervention was usually palliative, it is now more frequently used as a prophylactic measure, to prevent reactivation of caseous or cavitary lesions or spread of infection to the unaffected lung. In 1953 chemotherapeutic preparation before surgery was often of short duration; today our principle is of continuing drug therapy for at least six months, when frequently response is good and there is no need to consider surgery. In resistant or relapsed cases the newer drugs are introduced for a further three to four months prior to the institution of surgery. The length of post-operative drug coverage has also greatly increased, and we now consider 12 months as the minimum period necessary to prevent relapse.

#### Corticoids.

Finally, what is the place of corticoids in tuberculosis therapy? This question provides a good demonstration of our changing concepts in this disease. When first introduced, cortisone was found to cause reactivation of many tuberculous processes, and a number of new cases were discovered after its administration. Tuberculosis was soon considered to be one of the absolute contraindications to cortisone therapy. With increasing understanding of corticoid action, it was gradually realized that cortisone can have a beneficial effect in tuberculosis, owing to its anti-inflammatory effect. This applies mainly to exudative lesions affecting such serous membranes as the pleura or the meninges. The proviso, however, is that adequate chemotherapeutic cover be given concomitantly. In tuberculous meningitis and pleurisy, corticoids given initially prevent the occurrence of the previously dreaded fibrotic complications of the healing phase. With their use the length of illness and hospital stay is much reduced.

On the other hand, the routine use of corticoids in tuberculosis is to be deplored. A recent trial by the Research Committee of the Tuberculosis Society of Scotland has demonstrated that patients on initial corticoid therapy show quicker symptomatic relief and cavity closure in the early stages; there is no difference, however, at the end of 12 months in these patients, as compared with a control group on routine chemotherapy, in sputum conversion, in cavity closure or in X-ray stability. The main indication for corticoids in pulmonary tuberculosis is in the highly toxæmic patient who may die during the early phase despite adequate chemotherapy. Such patients are dramatically improved and are given a chance to have the full benefit of prolonged drug administration. Corticoids are also used to combat hyperergic phenomena resulting from the administration of anti-tuberculosis drugs, thus allowing their uninterrupted use. In most cases they are given for a short period in the initial phase of the disease, and it must be stressed again that they have no place in the routine management of pulmonary tuberculosis.

#### Summary.

Briefly, our present views on the management of tuberculosis could be summarized as follows.

Early hospitalization is preferable for the institution of drug therapy and sensitivity tests, but domiciliary treatment is not considered detrimental. Some would start with triple chemotherapy until the results of sensitivity tests are available, but on the whole chemotherapy consists of two-drug regimens (INH combined with streptomycin or PAS). The period of bed rest and isolation is becoming shorter, and early ambulation with return to work is favoured by most physicians. The duration of chemotherapy has at least doubled, and a minimum of two years is considered necessary, with indefinite continuation as a recent controversial point. If bacilli become resistant, we are now in

a slightly better position, in that we have a number of alternative, although highly toxic, drugs to rely on. Surgical intervention is used less frequently and much more selectively, especially where medical treatment has failed. In highly toxic cases or in those involving serous membranes, corticoids for a short period seem to be beneficial.

#### Conclusion.

Finally, for the future, the ultimate goal of eradication of the disease now appears feasible, and I am sure that better chemotherapy and enhanced public health measures will accomplish it in the not so distant future.

#### Acknowledgements.

I am indebted to Dr. John Read for helpful criticism in the preparation of this paper.

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#### Reports of Cases.

##### ANAPHYLACTIC SHOCK AND SUBSEQUENT DEMENTIA FOLLOWING THE ADMINISTRATION OF TIGER-SNAKE ANTIVENENE.

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#### Clinical Record.

A FARMER, aged 33 years, from southern New South Wales, sustained a tiger-snake bite to his right ankle on September 15, 1959. First aid was not administered until one hour later. Approximately two hours after the snake bite, he was admitted to the district hospital, where he was described as being nervous but rational. A slow intravenous injection of 1500 units of tiger-snake antivenene was given. Five minutes later the patient became unconscious. In a matter of seconds he was profoundly shocked, with severe hypotension, cyanosis and sweating. Immediate treatment was given for anaphylactic shock. This consisted of an intravenous injection of 200 mg. of hydrocortisone, a subcutaneous injection of 10 min. of adrenaline and the continuous intranasal administration of oxygen. Five pints of serum were administered intravenously, and the pulse rate returned to normal after 60 minutes. However, the patient had been deeply shocked and pulseless at the wrist for 30 minutes.

His subsequent behaviour varied from quiet cooperative-ness on the one hand to restlessness and violence on the other. Management was made more difficult because of his refusal of food and fluids. Eleven days after the accident he was transferred to the Royal Melbourne Hospital and admitted to the psychiatric ward under the care of Dr. Alex Sinclair.

Physical examination of the patient revealed no abnormality apart from a cruciate incision overlying the snake-bite wound at the right ankle. He was somewhat drowsy, but at the same time sufficiently restless to require restraint. Complete aphasia was present, and the patient could not comprehend verbal instructions. He was unable to feed himself and frequently refused food. There was incontinence of both urine and faeces. Lumbar puncture was unsuccessful because of a bone graft over the lumbar part of the spine. (This had been performed 18 months previously after an operation for the removal of an intervertebral disk.) All laboratory investigations performed gave results substantially within normal limits: the blood urea content was 23 mg. per 100 ml., the serum sodium content 135 mEq/L., the serum potassium content 5.6 mEq/L., the serum chloride content 84 mEq/L., the haemoglobin value 94% and the white cell count 14,000 per cubic millimetre.

Treatment consisted of maintenance of adequate nutrition and prophylactic chemotherapy, procaine penicillin being administered in a dosage of 900,000 units every eight hours for five days. Sedation with 200 mg. of quinalbarbitone or with chlorpromazine (50 mg. given intramuscularly) was occasionally necessary. One millilitre of tetanus toxoid was given.

The main features of interest relate to personality changes. During the first week his behaviour was automatic. External stimuli failed to provoke any appropriate responses. He remained mute and incontinent and was occasionally violent; his condition is best described as regression to infantile level. His first words were oaths following a painful stimulus; otherwise his communication was restricted to affirmative replies to any question or statement. Recognition of people and familiar objects returned soon, and he was able to address people by name. After one week, performance of simple routines, such as feeding himself and smoking, were attained. He became continent of faeces, then of urine within two weeks of his admission to hospital. The main features of his personality change were revealed in stolidity and emotional unresponsiveness. Although he recognized his wife, he failed to show her the slightest affection. (This attitude was an exaggeration of a similar one which existed prior to his illness.) After two months the patient became quite a fluent reader, but other achievements such as writing remained very backward despite attempts at formal reeducation.

His speech did not reach adult standard. He customarily adopted the passive role in conversation, and rarely spoke more than five or six consecutive words in a sentence. He seemed unable to discern the difference between patients, nursing staff and medical staff, and treated all with scant respect.

During his last two weeks in hospital two trends became more marked. The first was lack of cooperation with the nursing staff, and the second was a tendency to take money he found lying around.

The patient's background was as follows. He was married, with three young daughters. He had served for three and a half years in the army in World War II. His occupation had always been connected with some form of farm labour. His personality was variously described by his wife and associates as simple, immature, emotionally shallow and boisterous. His smoking and drinking habits were moderate, and he had the usual interests of a member of a small, self-contained rural community. He performed his work adequately and was always punctual, but seems to have been rather accident-prone. His social behaviour was rather unpolished, and he showed little appreciation of differences in social status.

After eleven weeks in hospital the patient returned to his home environment, where, despite some early clumsiness, he was shortly able to resume his former duties. Important new features of his personality have emerged. He is resentful of discipline and rather loath to work. He is crafty and sly in his dealings (especially financial) with his fellows. Altogether, however, he has been able to resettle satisfactorily into a permissive domestic situation in a tolerant country community.

#### Discussion.

The interest of this case lies first, in the preservation of former dominant character traits in a caricatured form, and secondly in the emergence of new retrogressive features after the illness. The latter might have been expected on pathological grounds. The cortical neurons are more susceptible to anoxia than phylogenetically less recent elements of the central nervous system; hence removal of higher cortical control by anoxia will result in decreased inhibitory power and a blunting of moral judgement. This was clearly demonstrated by the patient's behaviour, for instance in stealing, in occasional outbursts of temper and in his unwillingness to accept authority. Such expressions of immaturity are reminiscent of the behaviour of a child.

No accurate information is available in Victoria as to the frequency of anaphylactic shock following the injection of tiger-snake antivenene. The Commonwealth Serum Laboratories' records show that such reactions are infrequent. Antivenene affords such valuable protection that in any case of snake bite in which the snake has been positively identified, antivenene should be given.

#### Summary.

A case is presented of anaphylactic shock following the injection of tiger-snake antivenene in a man, aged 33 years, who had been bitten by a tiger snake. Subsequent cerebral anoxia was sufficient to cause dementia. The patient's gradual recovery from this is described.

#### Acknowledgements.

My thanks are due to Dr. Alex Sinclair, honorary psychiatrist to the Royal Melbourne Hospital, for his encouragement and for his permission to publish this case report, and to Miss Lorna Hay, of the School of Social Services of the University of Melbourne, who paid visits to the patient's home district to investigate his background and former personality.

### Reviews.

**Controlled Clinical Trials: Papers Delivered at the Conference Convened by The Council for International Organizations of Medical Sciences Established under the Joint Auspices of UNESCO and WHO. Organized under the direction of A. Bradford Hill, F.R.S.; 1960. Oxford: Blackwell Scientific Publications Ltd. 9" x 5½", pp. 184, with illustrations. Price: 20s.**

THE Council for International Organizations of Medical Sciences arranged a conference in Vienna in 1959 to discuss the principles, organization and scope of controlled clinical trials. Since the English school had had the greatest experience in this field, it was arranged that they should present papers on the different problems raised by clinical trials. We find papers by Bradford Hill, Witts, Armitage, Reid, Doll and Pickering among others. The discussion on the papers has not been published. There is little in the book on mathematical technique; but interested clinicians will find answers to practically every question they are likely to ask. Bradford Hill, Witts and Pickering discuss ethics. Armitage discusses the construction of comparable groups and answers a question frequently asked—namely, how can we apply mathematical analysis to cases which vary in all sorts of ways? The answer is that by allotting the cases by randomization to treated and control series, the uncontrollable factors can largely be cancelled out; indeed, the statistical analysis is largely to see whether the differences between treated and controls can be regarded as too big to be merely chance differences. Fletcher writes on observer error. An observer's report on a radiograph is compared



with those of other observers and with his own report from another occasion. Such experiments can help to dispel undue dogmatism. Many ethical difficulties about controls can be overcome by using standard methods or even other new methods as controls. Some notorious cases have arisen, even in recent times, in which it would have been possible to obtain an answer by proper trials—for example, gold therapy in arthritis, adrenalectomy in cancer of the breast—whereas the efficacy of the new drugs in tuberculosis was very soon established. Perhaps all clinicians should read the concluding remarks by Pickering and Bradford Hill.

**A Practical Handbook of Psychiatry for Students and Nurses.** By Louis Minski, M.D., F.R.C.P., D.P.M. Fourth edition; 1959. London: William Heinemann, Medical Books, Limited. 7½" x 4½", pp. 152. Price: 7s. 6d. (English).

The progress of and growing interest in the subject of psychiatry have led to the publication of four editions of this work in 14 years, the fourth appearing only three years after the third. A good deal of general revision has taken place, mainly in the section dealing with therapy, in which new stress is laid on group psychotherapy, psychodrama and tranquilizers. We think that this is a book geared admirably to the needs of nurses but rather too much on the level of the "students' aids" series to be a serious text for medical students.

The chapters fall into four broad groups, the first dealing simply with developmental psychology and general symptomatology—rather too simply, in fact—and it is here that the book is found wanting. The second group describes clinically the disease entities, for which the Meyer classification is used, and the third discusses therapy. This part is very good indeed, including as it does nursing procedures and practical aspects of many therapeutic measures. These chapters are well worth the student's reading time. A chapter on legal aspects of psychiatry concludes with a précis of the findings of the Royal Commission on the Law Relating to Mental Illness and Mental Deficiency. This Commission recommends the extension of facilities for voluntary treatment of mental patients, and recognizes the responsibility of the social group to maintain mental health within its ranks.

#### CORRIGENDUM.

THE edition of "Outline of Orthopaedics", by John Crawford Adams, reviewed in the issue of December 10, 1960, at page 943, was the third, not the second as stated. The year of publication was 1960, not 1958. We regret this error.

#### Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Modern Trends in Occupational Health", by R. S. F. Schilling, M.D., M.R.C.P., D.P.H., D.I.H.; 1960. London: Butterworth & Co. (Publishers) Ltd. 9½" x 6½", pp. 330. Price: 92s. 6d.

"Discussions on Child Development", edited by J. M. Tanner, M.D., D.Sc., D.P.M. and Barbel Ingelder; Volume IV, "The Proceedings of the Fourth Meeting of the World Health Organization Study Group on the Psychobiological Development of the Child, Geneva 1956"; 1960. London: Tavistock Publications. 8½" x 5½", pp. 200. Price: 30s. (English).

"The Metabolism of Cardiac Glycosides: A Review of the Absorption, Metabolism and Excretion of Clinically Important Cardiac Glycosides", by S. E. Wright, Ph.D., M.Sc., A.R.I.C.; 1960. Oxford: Blackwell Scientific Publications. 8½" x 6", pp. 96. Price: 35s. (English).

"Diverticulitis", by Sara M. Jordan, M.D., and Russell S. Boles, Jr., M.D.; Modern Medical Monographs, No. 21; 1960. New York and London: Grune & Stratton. 8½" x 5½", pp. 96, with illustrations. Price: \$4.75.

"General Zoological Microtechniques", by Frances M. Weesner; 1960. Baltimore: The Williams & Wilkins Company. 9" x 6", pp. 240. Price: 57s. 9d.

"The Structure and Dynamics of the Human Mind", by Edoardo Weiss, M.D.; 1960. New York and London: Grune & Stratton. 8½" x 5½", pp. 496. Price: \$8.75.

"Medical and Dental Aspects of Fluoridation", by W. A. Cannell, M.R.C.S., L.R.C.P., D.P.H., L.D.S., R.C.S.; 1960. London: H. K. Lewis & Co. Ltd. 8½" x 5½", pp. 136. Price: 15s. net (English).

"Calcium Metabolism and the Bone", by Paul Fourman, M.D., D.Sc., F.R.C.P.; 1960. Oxford: Blackwell Scientific Publications. 8½" x 5½", pp. 323. Price: 37s. 6d. (English).

"Handbook of Hematological and Blood Transfusion Technique", by J. W. Delaney, F.I.M.L.T.; 1960. London: Butterworth & Co. (Publishers) Ltd. 8½" x 5½", pp. 150, with illustrations. Price: 62s. 6d.

"Anaerobic Bacteriology in Clinical Medicine", by A. Trevor Willis, Ph.D. (Leeds), M.B., B.S. (Melb.); 1960. London: Butterworth & Co. (Publishers) Ltd. 8½" x 5½", pp. 180. Price: 43s. 6d.

"Modern Trends in Accident Surgery and Medicine", edited by Ruscoe Clarke, M.B.E., M.B., F.R.C.S. (Eng.) et al.; 1959. London: Butterworth & Co. (Publishers) Ltd. 9½" x 6½", pp. 360, with illustrations. Price: 102s. 6d.

"Modern Trends in Diagnostic Radiology" (Third Series), edited by J. W. McLaren, M.A., M.R.C.P., F.F.R., D.M.R.E.; 1960. London: Butterworth & Co. (Publishers) Ltd. 9½" x 6½", pp. 304, with many illustrations. Price: 102s. 6d.

"Projective Techniques with Children", edited by Albert L. Rabin and Mary R. Haworth; 1960. New York, London: Grune & Stratton Inc. 10" x 6½", pp. 406, with illustrations. Price: not stated.

"Casualty Services and their Setting: A Study in Medical Care", published for the Nuffield Provincial Hospitals Trust; 1960. London, New York, Toronto: Oxford University Press. 8½" x 5½", pp. 144. Price: 14s.

"Pseudomonas Aeruginosa Infections", by Claude E. Forkner, Jr., M.D.; 1960. New York, London: Grune & Stratton Inc. 8½" x 5", pp. 110, with many illustrations. Price: \$5.25.

"Textbook of Histology", by William F. Windle; third edition; 1960. New York, Toronto, London: McGraw-Hill Book Company Inc. 9" x 6", pp. 586, with many illustrations. Price: \$10.95.

"Electrical Studies on the Unanesthetized Brain", edited by Estelle R. Ramey, Ph.D., and Desmond S. O'Doherty, M.D.; 1960. New York: Paul B. Hoeber Inc. 9" x 6", pp. 442, with 252 illustrations. Price: \$6.00.

"Clinical Bacteriology", by E. Joan Stokes, M.B., F.R.C.P.; Second edition; 1960. London: Edward Arnold (Publishers) Ltd. 8½" x 5½", pp. 320, with illustrations. Price: 30s. (English).

"Queensland Year Book, 1959", number 20, compiled by S. E. Solomon; 1959. Queensland: Commonwealth Bureau of Census and Statistics. 8½" x 5", pp. 472. Price: not stated.

"Fluoridation: Errors and Omissions in Experimental Trials", by Philip R. N. Sutton, D.D.Sc., L.D.S.; 1960. Melbourne: Melbourne University Press. 8½" x 5½", pp. 148. Price: 12s. 6d.

"Protein and Amino Acid Requirements in Early Life", by L. Emmett Hold, Jr., M.D., Paul György, M.D., Edward L. Pratt, M.D., S. E. Snyderman, M.D., and William M. Wallace, M.D.; 1960. New York: New York University Press. 9" x 6", pp. 70, with illustrations. Price: \$1.00.

"Principles of Surgical Practice", by Emanuel Marcus, M.D., Ph.D., and Leo M. Zimmerman, M.D.; 1960. New York, Toronto, London: McGraw-Hill Book Company Inc. 10" x 7", pp. 440, with many illustrations. Price: not stated.

"Addendum 1960 to the British Pharmacopoeia 1958", published under the direction of the General Medical Council pursuant to the Medical Act, 1956; 1960. London: The Pharmaceutical Press. 9" x 5½", pp. 108. Price: 30s. (English).

"The Practitioner's Handbook", edited by William A. R. Thomson, M.D.; 1960. London: Cassell & Company Ltd. 9½" x 7½", pp. 736. Price: 63s. (English).

"Miscellaneous Notes", by F. Parkes Weber, M.D., F.R.C.P., F.S.A.; Eighth Series; 1960. London: H. K. Lewis & Co. Ltd. 7½" x 4½", pp. 12. Price: 3s. (English).

"Artefacts and Handling and Processing Faults on X-ray Films", by Prof. Dr. E. A. Zimmer; 1960. New York and London: Grune & Stratton. 9½" x 6½", pp. 72, with 128 figures. Price: \$5.75.

"The Tonsils and Adenoids in Childhood", by Donald F. Proctor, M.D.; 1960. Springfield, Illinois: Charles C. Thomas, Oxford: Blackwell Scientific Publications. 11" x 8½", pp. 84, with illustrations. Price: 60s. (English).

"The Chemistry of Lipids in Health and Disease", by H. K. King, M.A., Ph.D., F.R.I.C.; 1960. Springfield, Illinois: Charles C. Thomas, Oxford: Blackwell Scientific Publications Ltd. 9" x 6", pp. 112. Price: 30s. (English).

## The Medical Journal of Australia

SATURDAY, DECEMBER 24, 1960.

### "GOOD WILL TOWARD MEN."

THERE is perhaps no greater paradox than man's attitude to man. True misanthropy is rare enough. Few will rave with the Athenian Timon, "I am *misanthropos*, and hate mankind", or wholly approve Mark Twain's cynical dismissal: "All that I care to know is that a man is a human being—that is enough for me; he can't be any worse." More will share the mixed feelings expressed in the jingle:

I wish I loved the Human Race;  
I wish I loved its silly face;  
I wish I liked the way it walks;  
I wish I liked the way it talks;  
And when I'm introduced to one,  
I wish I thought *What Jolly Fun!*

The majority of people, however, accept their part in a common humanity with little or no thought or regret about it. They have no grudge against their fellowman, and they wish him no harm. If they do not bestir themselves greatly to help him in his more inconvenient needs, it is not because they do not mean well. There is a seemingly universal heritage of good will in mankind's philosophy. Professor C. S. Lewis<sup>1</sup> has collected examples of its expression from many sources: "Speak kindness . . . show good will" (the Babylonian *Hymn to Samas*); "Man is man's delight" (an Old Norse writing); "He whose heart is in the smallest degree set on goodness will dislike no one" (the *Analects* of Confucius); "Utter not a word by which anyone could be wounded" (a Hindu writing); "Love thy neighbour as thyself" and "Love the stranger as thyself" (the Jewish Law); "Men were brought into existence for the sake of men that they might do one another good" (Cicero); "I am a man: nothing human is alien to me" (Terence). Supremely perhaps it finds expression in the celestial chorus associated with the first Christmas in the narrative of the physician Luke: "Glory to God in the highest, and on earth peace, good will toward men".

The spirit of good will towards men may be said to underlie the essential tradition of medicine, implicit in the Hippocratic Oath and explicit in the opening words

of the Declaration of Geneva adopted by the World Medical Association in 1948: "I solemnly pledge myself to consecrate my life to the service of humanity." Moreover, it goes far beyond the thought of charity and dedication in the doctor's personal attitude to his patients, important as these may be. It should widen his human view and act as an antidote to the unhappy present-day influences described elsewhere in this issue by W. Brodie Grant (see page 1018), influences which, though admirable in themselves, tend to dehumanize medicine. It should help him, as Grant puts it, to see man whole in all his dignity, as well as in his despair and degradation. It should underline for him once more the profound significance of interpersonal relationships and of environmental factors in the origins and complications of human disease. It should declare to him once and for all that man is a social being, not an insensate piece of machinery, whose physically manifested ills are just one of the outcomes of his encounter with a total environment in which he looks for but does not always find good will.

Perhaps medicine has a larger role in store for it than we have yet imagined in bringing man to his senses; for as a race our record is a pathetic and terrible paradox. In all ages, places and conditions we have sensed and acknowledged the bond of human brotherhood. Yet none of us dares deny Burns's lament:

Man's inhumanity to man  
Makes countless thousands mourn!

This is an indictment that is as sadly true today as it was when it was written nearly two centuries ago. Greed and selfishness, ambition and pride, still sound their voices loud in the counsels of men, and strife and want and flouting of human dignity remain. Christmas calls to us to think again, to join Burns in a more hopeful mood:

Then let us pray that come it may,  
As come it will for a' that,  
That sense and worth, o'er a' the earth,  
May bear the gree, and a' that.  
For a' that and a' that,  
It's comin' yet for a' that,  
That man to man, the world o'er,  
Shall brithers be for a' that.

We may not all believe in angels nowadays, but the detail need not bother us as we celebrate Christmas. It is surely better that it should not. The loss is ours and our fellows' if at this season of good will it stops our ears to the invitation to rest beside the weary road and hear the angels sing.

### WHAT THE U-2 PLANES DISCOVERED.

AN Australian scientific theory on how rain is formed has gained strong support from scientific measurements made recently by the American U-2 flights. Rainmaking research has shown that clouds are likely to form rain when there are large numbers of tiny, solid particles in the atmosphere of the clouds. Each one of these particles becomes a nucleus for the formation of ice crystals, which subsequently melt and become raindrops. One unsolved mystery is the origin of the host of tiny particles which are found from time to time in the upper atmosphere. They may be dust particles thrown up from the ground.

<sup>1</sup> "The Abolition of Man", Oxford University Press, London, 1944.

But Dr. E. G. Bowen, Chief of the C.S.I.R.O. Division of Radiophysics, believes that they may originate from meteor showers which fall into the earth's atmosphere from outer space. One test of their origin is to measure their number at greater and greater heights in the atmosphere. If they come from the ground they will decrease sharply in number as the height increases and very few will be found at heights above 30,000 or 35,000 feet. If they are coming from outside the atmosphere, however, there should be just as many at great heights as low down.

The arrival of the high-flying U-2 aeroplanes in Australia provided a unique opportunity to test the meteor theory. Lieutenant-Colonel McCaslin and the U.S. Air Force were prepared to give C.S.I.R.O. the utmost help and cooperation. They willingly allowed the aeroplanes to be fitted with special dust-collecting filters designed by Dr. Keith Bigg of the C.S.I.R.O. Radiophysics Laboratory. The Department of Air made all the necessary local arrangements for the flights, and another C.S.I.R.O. officer, Mr. K. J. Heffernan, went down to Sale to take charge of the experiment. The U-2 flights have shown that considerable numbers of these particles exist up to heights above 60,000 feet. This lends a great deal of support to the suggestion that they are coming into the atmosphere from outer space. To test the theory further, it is hoped to make measurements up to 100,000 feet, probably by means of balloons, and to try to obtain the chemical identification of the particles. In this way their nature and origin are gradually being revealed. When the story is complete, the information will be of vital importance in our understanding of the weather and in the forecasting of rain.

### Current Comment.

#### POLIOMYELITIS VACCINE FOR USE IN PRIVATE PRACTICE.

For a long time there has been agitation for poliomyelitis vaccine to be made available for use by medical practitioners in their private practices. The Federal Council of the B.M.A. has made repeated requests to the Commonwealth Minister for Health that this wish should be met. However, there were practical difficulties in the general distribution of this vaccine if it was to be safely and effectively used and if its potency was to be maintained. The National Health and Medical Research Council, to which the Minister referred the question, set up a committee of three, consisting of two experienced general practitioners and a medical officer of the Commonwealth Department of Public Health. They devised a procedure intended to satisfy all requirements, and this was adopted by the Council and subsequently accepted by the Minister as the basis for making the vaccine available. If the machinery seems irksome and too restrictive, it should be remembered that it was devised only after careful consideration of all the circumstances by a committee fully aware of and fully in sympathy with the doctor in general practice. The procedure is set out in the following letter from the Minister to the General Secretary of the Federal Council, which we publish by request:

Dear Dr. Hunter,

The National Health and Medical Research Council has recommended that poliomyelitis vaccine (C.S.L.) should now be made available to medical practitioners in private practice and has set out in detail the conditions under which its release should be effected.

These conditions are:

(i) Antigen will be supplied without charge to State Health Authorities and to approved Local Health Authorities by the Commonwealth Serum Laboratories in multiple and single dose phials as required. The receiving authorities will be responsible for the appropriate storage and correct release of the antigen and the maintenance of the appropriate immunization record.

(ii) For record purposes, the Committee recommends that a standard immunization card, similar to that currently used as the record for Poliomyelitis immunization, should be used.

(iii) The approved local authorities will be required by the State Health Authorities to conduct two immunization campaigns for infants each year using quadruple antigen and making no charge for the service or for the antigen.

(iv) Subject to (iii) above, antigen may be supplied by the State Distributing Authorities without charge to medical practitioners for the immunization of patients privately. The following conditions will apply:

(a) The antigen will be issued on requisition to the practitioner himself or to his authorised agent, but in no circumstances to the patient or to a member of the public;

(b) the distributing authority will hold the practitioner responsible for completing the appropriate record and returning it within a specified time together with any unused antigen;

(c) the medical practitioner will undertake to make no charge for the antigen used;

(d) if the distributing authority is satisfied that excess dosage, resulting from the non-attendance of patients at appointments, can be safely stored by the medical practitioner, it may authorise retention of the excess antigen by the practitioner under appropriate conditions for a period not exceeding 14 days.

Unused antigen temporarily stored by the practitioner under these conditions must be returned to the distributing authority within this time. In the alternative, excess dosage must be returned promptly and stored by the authority.

(v) The Commonwealth Serum Laboratories will issue special circulars warning medical practitioners, State Health Authorities, approved Local Health Authorities and other persons handling prophylactics, of the special precautions to be taken to preserve the potency of the product and in particular, the proper methods of storage of antigens.

I have approved the release of Commonwealth Serum Laboratories' poliomyelitis vaccine to private practitioners under these conditions.

I am withholding approval of the issue of mixed antigens containing a poliomyelitis component until the Commonwealth Serum Laboratories have sufficient stocks of these to commence distribution.

(Signed)

DONALD A. CAMERON.

#### THE HEALTH SITUATION IN THE CONGO.

DR. M. G. CANDAU, Director-General of the World Health Organization, addressing a Press conference at Leopoldville on November 30, 1960, said that the health situation of the Congo had been maintained on a reasonable level, and there had been no epidemic outbreaks of disease. This was due to the efforts of Congolese health workers, including medical assistants and nurses, as well as the international contribution made by the Red Cross and Red Crescent Societies. He expressed the hope that the Red Cross medical teams would be able to remain somewhat longer in the Congo or would be replaced by other teams until the country's health service could be put on a firmer footing. He was grateful to those Red Cross Societies which had already agreed to maintain their present teams for an additional period or to replace them with fresh staff. Dr. Candau also paid a warm tribute to the achievements of the government teams as well as



those of other international personnel. He said that it was largely due to their devotion that a major calamity in the Congo's health situation had been averted.

However, Dr. Candau went on, the emergency was not yet over. WHO was actively recruiting 130 medical operational staff, but this took time, and there was a gap to be filled. WHO had reviewed 2000 applications for these posts, of which 486 had been followed up, and 64 candidates were already in process of recruitment. The 130 posts included general surgeons, senior physicians with tropical experience, district medical officers, microbiologists, anaesthesiologists, pharmacists, malarologists, sanitarians, X-ray technicians, biochemists and public health medical officers. WHO was making every effort to get these experts rapidly in place and at work. However, the most important assistance that WHO was rendering the Congo was the long-term programme for training Congolese doctors, of whom there was not one when the country became independent last July. Thanks to the cooperation of the French Government, 60 Congolese medical assistants were at present training for full medical degrees at the Universities of Rennes, Nantes, Bordeaux, Lyon and Montpellier. These were people who had already had four to six years' medical training, and many had had practical experience in hospital or other health work. They should be able to qualify fully as doctors in about three years' time. Together with fresh medical graduates from the Lovanium University in the Congo itself, they would then constitute the backbone of the future health services of the Congo. Another group of seven Congolese undergraduates at present in medical schools in Geneva and in Lyon should qualify as doctors within seven years. WHO was also giving a few Fellowships for special medical studies, such as medical entomology, and was helping to strengthen the medical faculty at the Lovanium University in the Congo.

#### BRAIN NUTRITION VIA CELLS: ABSENCE OF TISSUE SPACES.

IN these columns we recently discussed the concept of free fluid in the tissues and cited anatomists who could not find tissue spaces in living somatic tissues.<sup>1</sup> Their view was that the spaces seen in pathological sections were artefacts. In an inaugural lecture delivered at the University of Leeds, C. E. Lumsden<sup>2</sup> has stated that electron microscopists have not been able to find the extracellular spaces which they had assumed to exist in the brain as in other organs. He showed slides in which the fields had been magnified up to 40,000 times; there were no spaces in the tissues between the nerve cells and the nearest capillaries. Moreover, the neuron bodies and nerve fibres were in perfect contact throughout with the surrounding glia cells. It appears that the familiar analogy between a cell and a grain of sand is false. Histologists usually see dead glia cells shrivelled up, but the live cells occupy all the space; water passes within them and is transferred from cell to cell.

The neuron, according to Lumsden, is a highly individual unit with an individual function, not exactly repeated by its neighbour. All the cells in a local group serve a similar function, but they present individual differences. Nerve cells from their first development are possessed of individual specific reactions to a host of chemical substances. In culture all nerve cells send out branches, which grow usually at the rate of 1 mm. per day. At their fanned-out tips they take in fluid by drinking (pinocytosis); the droplets pass up the fibre to the cell body. Other substances move down the fibre and pass out through the tip; the particles move at a speed of a few millimetres per day. Thus a good deal of the nourishment of the nerve cells comes slowly through the tips of the nerve fibres. But the oxygen exchange must

be direct through the cell walls. Neuroglia, Lumsden states, is not merely an inert framework or cement. He showed films demonstrating the transport of neurosecretion from one cell to another by the branching microglia cells. Myriads of glial branches surround neuron bodies and nerve branches. In a single section the background appears amorphous; but each dot in the field represents a branch of the same or a different cell. Lumsden points out that Ramón y Cajal never depicted the glia as an amorphous ground substance; the background material comprises fragments of formed glia cells. In tissue culture glia cells form branches with fanned-out tips continuously drinking fluid. They form bandages round and round the nerve fibres. In culture only are seen the delicate protoplasmic vells of the tips. These cannot be seen in microscopic sections because they are lost during pickling and cutting.

#### DOUBTS ABOUT THE DISC.

DR. GUIDO COSTA BERTANI, a distinguished rheumatologist of Buenos Aires, founded the *Revista argentina de reumatología* in 1936. Since 1945 he has written a number of articles controverting the prolapsed-disc gospel of sciatic pain. His latest book<sup>3</sup> deplores the "furor quirurgico"—the almost universal belief that 95% of sciatic pains are surgical and can be relieved by decompression of the nerve roots. Costa Bertani suggests 5% as a more accurate estimate and asserts that in the great majority of cases the primary lesion of nerve roots is inflammatory and can be treated medically; he gives the histories of the patients in 30 such cases. He calls rheumatic radiculitis a common entity; other factors include degenerative arthritis of intervertebral joints, infections and alcoholism. Trauma is an important factor in 14% of cases. Costa Bertani deplores especially the almost light-hearted manner in which myelography is performed. This is known to be a serious procedure and previously was frowned upon except before operation when the diagnosis of a tumour was certain but the level was not. The oil always sets up an inflammatory reaction around the roots, and sometimes the effects are deplorable. He is still more emphatic about discography (injecting material under pressure into the substance of the disc), which he calls antiscientific and antinatural. In a careful anatomical study he shows that a hernia of the disc can never press on the fifth lumbar root unless it is large and centrally placed.

J. C. Wilson,<sup>4</sup> after a careful study of this problem, has recently concluded that arthritis of intervertebral joints is the commonest cause of lumbar pain and sciatica. Weight-bearing joints are always supported by compact bone; nowhere in the body is fibrocartilage, and cancellous bone as in the vertebra, asked to bear weight continuously. The disc space is not narrowed, Wilson states, until the intervertebral joints and the apophyses have softened and given way. The collapse of the disc is slowly progressive over several years, and it never causes nerve root irritation. In a discussion of Wilson's paper published with it C. H. Sheldon deprecates the inventing of such imaginary qualities as hydrophilia to make the accepted mechanics credible. Eleven years ago J. A. Chavany, P. Janny and D. Hagenmüller<sup>5</sup> observed that when disc fragments did prolapse they did not persist; the displaced pieces behaved like other damaged tissues, were rapidly invaded by granulation tissue and soon shrank away. Recently S. de Sèze, J. Welling, C. Guérin and J. Dry<sup>6</sup> have published pictures of a myelogram outlining an enormous defect, interpreted as a prolapse of a huge fragment of the fifth lumbar disc. The patient refused operation, and the symptoms were completely relieved by medical treatment. The authors drew the lesson that the inflammatory element in sciatica is more important than the mechanical one.

<sup>1</sup> MED. J. AUST., 1960, 1: 663 (April 23).

<sup>2</sup> "Nourishing Brain Cells", Leeds University Press, Leeds, 1959.

<sup>3</sup> "Crónicas Clínicas", 1959, Losada, Buenos Aires.

<sup>4</sup> Amer. J. Surg., 1960, 100: 313 (August).

<sup>5</sup> Presse méd., 1949, 57: 773.

<sup>6</sup> Rev. Rhum., 1960, 27: 48 (January).

## Abstracts from Medical Literature.

### GYNÆCOLOGY AND OBSTETRICS.

#### Cytological Prognosis in Cancer of the Cervix.

R. M. GRAHAM (*Amer. J. Obstet. Gynec.*, April, 1960) discusses the question whether radiation and operation are saving the same patients or whether they are saving different patients, and considers the value of vaginal cytology in the choice of treatment and in ultimate prognosis. She states that if patients saved by operation are different from those saved by radiotherapy, it should be possible to make a substantial improvement in survival figures. Clinical staging of the disease at present offers the best lead to prognosis, but more precise information may be obtained by studying the vaginal cytology of each patient with cancer of the cervix. Inflammatory response may be assessed by counting the proportion of histiocytes present. The greater number of these cells present, the more intense is the local inflammatory response. In those patients whose cell population contained more than 50% histiocytes the five-year survival rate was 63% when treated by radiotherapy alone. Patients with less than 50% histiocytes had a five-year survival rate of only 24%. The same type of differential count was carried out on 66 consecutive patients treated by radical surgery. Sixty-two of these patients had few histiocytes and the three- to five-year survival rate was 84%, in marked contrast to the poor result in the radiation series. These figures are taken to suggest that if there is little evidence of a chronic inflammatory response the results of operation are likely to be good, while the prospects of treatment by radiotherapy are poor. Secondly, the percentage of superficial squamous cells gives some indication of the amount of oestrogen present. Patients with cancer of the cervix have more oestrogen effect than normal individuals, and they also differ from one another in this respect. Superficial cell counts were made on 327 patients with primary cancer of the cervix before treatment; 204 of these were treated by radiotherapy and 123 by surgery. In this case the greater the proportion of superficial cells, the higher the survival in surgically treated patients and the lower the survival rate among those treated by radiation. Thirdly, the cellular phenomenon of sensitization response (SR) is noted in the vacuolization in the cytoplasm of basal cells and is used as a measure of radiation sensitivity. If no basal cells are present the sensitization response is zero. When these cells make up more than 10% of the count the patients appear to be more sensitive to radiation. The incidence of cells showing the sensitization response was studied in both surgically and radiologically treated patients of similar stage. The patients treated surgically fared far better if sensitization response was absent and did poorly if it was present. The patients treated by radiation showed the reverse trend. The author concludes that there is some evidence that surgery and radiation are

not curing the same cases. The value of a detailed study of the cellular constituents of each patient's vaginal smear as regards inflammatory cells, oestrogen effect and sensitization response is considered worthy of further investigation.

#### Obstetric Hypnoanæsthesia.

R. V. AUGUST (*Amer. J. Obstet. Gynec.*, June, 1960) discusses the use of hypnosis in obstetrics which has been his anæsthetic of choice since November, 1957. It was attempted in 351 cases and was completely successful in 328 (93.5%) as the sole anæsthetic agent, and was supplemented with other anæsthetic agents in the remainder. Conditioning was used on 174 patients and consisted of a ninety-minute indoctrination period for groups of six to eight expectant mothers and their husbands, followed by a variable number of one-hour practice sessions for women only. Hypnoanæsthesia without conditioning was used in 177 patients—initiated during labour without any prior explanation, discussion or practice. Additional anæsthesia was given to 23 patients, and was never withheld when requested. Hypnosis was uniformly successful in the control of hyperemesis and yielded excellent results in the control or promotion of lactation and in the production of post-partum comfort. Eight Cesarean sections, 98 forceps deliveries, 228 episiotomies and five laceration repairs were performed without chemical anæsthesia. The author concludes that the elimination of maternal and fetal deaths due to chemical anæsthesia makes hypnosis a worthwhile addition to the obstetrician's armamentarium.

#### Selection of Treatment for Corpus Cancer.

S. B. GUSBERG, H. C. JONES AND H. M. TOVELL (*Amer. J. Obstet. Gynec.*, August, 1960) present a review of 360 patients treated for cancer of the corpus uteri at the Columbia-Presbyterian Medical Centre in the years 1938 to 1952 from the histological, radiotherapeutic and surgical points of view. Histological study of the surgical specimens showed a striking decline in cure rate associated with (i) lack of differentiation, (ii) involvement of the cervix, (iii) deep myometrial invasion, and (iv) involvement of the ovary. Three clinical factors were observed to be important in treatment, namely the size of the uterus, the involvement of the isthmus or cervix, and lack of tumour differentiation. The stages and form of treatment advocated by the authors are as follows: Stage I, a minimal lesion, well-differentiated and localized with a small uterus, offers a situation in which total hysterectomy alone gives as good a result as a combined technique. Stage II, a moderate lesion with the uterus up to the size of a two and a half months pregnancy (or smaller with an undifferentiated tumour) is best treated by pre-operative radium application by the Stockholm method, followed by total hysterectomy. Stage III, an advanced lesion with a large uterus (or one of moderate size with an undifferentiated tumour), and/or cervical, vaginal or parametrial involvement should be treated

according to suitability by (a) radical hysterectomy, (b) pre-operative radium treatment followed by extended total hysterectomy and node dissection, or (c) pre-operative X-ray therapy and total hysterectomy. Stage IV, in patients with involvement of the bowel or bladder it might be possible to salvage an occasional selected patient by total pelvic exenteration.

#### Surgical Management of Carcinoma of the Cervix.

J. W. KELSO (*West. J. Surg.*, July-August, 1960) reports a study of 120 patients with carcinoma of the cervix treated surgically, 5 or more years ago. The ages of patients ranged from 22 to 76 years, and selection of cases was based on a reasonable hope of complete surgical removal of the neoplasm without consideration of age, weight or systemic complications. There were 71 Stage I growths and 49 Stage II growths. All were histologically proven cases of invasive carcinoma of the cervix. The method of treatment comprised radical Wertheim hysterectomy with bilateral lymphadenectomy followed by deep X-ray therapy as soon as possible. The five-year survival rate of Stage I cases was 87%, and of Stage II cases was 73%. The over-all five-year survival rate was 82%. Twenty-one patients had lymph node involvement, and of these 11 are alive and well after 5 years. The author considers that these five-year survival rates surpass those of any other series yet reported. Included in this series are 5 patients with carcinoma of the cervix complicated by pregnancy (3 Stage I cases and 2 Stage II cases). All are alive and well five years or more after treatment. Seven patients had carcinoma of the cervical stump (3 Stage I and 4 Stage II) and all are alive and well. Eight patients had adenocarcinoma of the cervix and only 4 are alive after five years. Complications after operation included 8 urinary fistulae (6.6%), 1 recto-vaginal fistula and 2 cases of phlebitis. The author considers that the fistula incidence is too high, but that such complications are to be expected with radical pelvic surgery. The operative mortality of the series was two patients (1.7%), which is a higher operative mortality rate than that of Meigs and others. In a total of 181 cases treated surgically by the author the operative mortality rate was 3.8%. He considers this figure too high but states that he has not been selective in his cases. He concludes that the salvage rate of the series reported is as good as or better than that achieved by radiotherapeutic treatment in leading centres, and that radical surgery followed by deep X-ray therapy has an important place in the treatment of carcinoma of the cervix.

#### Hysterectomy after Cone Biopsy.

D. CAVANAGH AND F. RUTLEDGE (*Amer. J. Obstet. Gynec.*, July, 1960) have investigated the morbidity rate of 66 consecutive patients who had had a total hysterectomy within four months of a cone biopsy of the cervix. There were no deaths in the series, but a febrile morbidity of 42.4% was found. A control group of 62 patients who had undergone hysterectomy alone showed a

post-operative febrile morbidity of 14.5%. The only relevant factor appeared to be the interval between the cone biopsy and the hysterectomy, but statistical evaluation suggested that this could be explained on the basis of chance. The febrile morbidity was not significantly higher with an interval of less than eight days, and when the hysterectomy was performed within six weeks of cone biopsy the mean febrile morbidity was 44.6% falling to 30% in the small number of cases in which a hysterectomy was performed six weeks to four months after cone biopsy. The authors conclude that while the febrile morbidity may be increased when hysterectomy is performed within six weeks of cervical cone biopsy, it is apparently not a serious problem.

#### Peritonitis after Obstetric and Gynaecological Operations.

P. MALPAS (*J. Obstet. Gynec. Brit. Emp.*, August, 1960) discusses the aetiology, sequence of events and treatment of peritonitis after obstetric and gynaecological operations. This complication is now relatively uncommon but remains one of the important hazards of pelvic surgery. He describes three phases in progressive post-operative pelvic peritonitis: hematoma formation, peritoneal infection and ileus. The stages may overlap, and spontaneous cure or treatment may limit the condition to the first or second phase. The author suggests various theories to explain the tendency to hemorrhage in pelvic operations and recommends careful hemostasis and more liberal drainage of oozing surfaces. He considers that intraperitoneal hemorrhage impairs local resistance, and provides a suitable culture medium for organisms. The diagnosis of post-operative bleeding is not easy, and the dangers of a "blind" blood transfusion are emphasized. The second phase of infection may develop over the next 2 or 3 days without obvious physical findings. The third phase of post-operative peritonitis is characterized by the presence of mechanical ileus. The sequence of events in peritonitis and obstruction is described. The gravity of such ileus is due to circulatory failure caused by the mechanical effects of distension rather than to infection. The author considers the source of distending gas is abnormal bacterial fermentation. The role of *Clostridium welchii* in the bacteriology of ileus is discussed. Biochemical changes include concentration of the blood, changes in blood volume and the development of an abnormal sodium/potassium balance. The electrolytic changes are due to failure of the peripheral circulation. The author states that intravenous therapy, important as it is, will not of itself cure an ileus; all it can do is sustain life until such time as the circulation returns to normal. The treatment of post-operative peritonitis includes prophylaxis, with special reference to thorough hemostasis and a free resort to drainage when indicated. The second stage demands the use of chemotherapy, antibiotics and perhaps blood or plasma transfusion. In progressive cases it is wise to drain too early rather than too late, and drainage should be done by the abdominal route rather than by colpotomy. Gastric suction is obligatory and should

be continued after abdominal decompression has been effected. In advanced and fulminating cases the abdomen should be opened and every coil of distended bowel deflated by multiple stab punctures, each closed by a purse-string suture.

#### The Maternal-Foetal Barrier.

C. T. REILLY (*Amer. J. Obstet. Gynec.*, August, 1960) surveys the problem of the transfer of protein molecules across the maternal-foetal barrier. This includes not only the transfer of blood agglutinogens but also thromboplastic substances presumed to be involved in hypofibrinogenemia, e.g. in amniotic fluid infusion. Although there has been considerable effort to determine the mechanism of such transfers, very little of the information gained has been applied from a preventive medicine standpoint to everyday obstetrics. Greater rises in Rh antibody titres occur as a result of delivery than during the entire pregnancy. The same post-partum rise is also shown in ABO hetero-specific pregnancies. The presence of foetal-type haemoglobin in the retroplacental clot found in cases of accidental hemorrhage, and also in the normal clot found during the third stage of labour, suggests that these clots are mixtures of both foetal and maternal blood. Any strong contraction between delivery of the baby and the delivery of the placenta could force retroplacental blood into the maternal venous sinuses of the uterus. Higher levels than usual of foetal-type haemoglobin are present in the maternal circulation in cases of accidental hemorrhage. The amniotic fluid, amnion, chorion and even the decidua vera contain antigens peculiar to the blood of the fetus when the fetus is a secretor, even though the mother is of a different blood group. The incidence of amniotic fluid entering the maternal circulation may be more frequent than has been previously considered; it is almost certain that some substance in the amniotic fluid can cause hypofibrinogenemia and this fluid is known to contain major blood group antigens. The author recommends that patients should be given citrus bioflavonoids and high doses of vitamin C prenatally to decrease capillary fragility and permeability and promote growth and healing. Vitamin K should be administered to all patients receiving broad-spectrum antibiotics during pregnancy. The decreasing of elevated pelvic venous pressure by encouraging patients to sleep on their sides rather than on their backs during the entire pregnancy and delivery of the patient in the Sims position may remove one factor in the pathogenesis of placental abruption. Artificial rupture of membranes performed as soon as it can safely and conveniently be accomplished after the onset of labour, in accordance with basic obstetrical principles, may prevent acute and massive amniotic fluid embolism and the adverse effect of the entrance of antigens into the maternal blood stream. The author states that the maternal side of the umbilical cord should never be clamped, but be allowed to drain, unless there is a possibility of multiple pregnancy. This would prevent foetal blood still contained in the placenta from being forced through

the torn chorionic villi into the retroplacental clot and thus into the uterine vessels. It is suggested that the use of oxytocics with delivery of the anterior shoulder should be reevaluated. This procedure reduces the immediate blood loss in the second stage of labour, but greater amounts of thromboplastic substances may be forced into the maternal circulation resulting, after the oxytocic effect has decreased, in constant heavier-than-usual amounts of bleeding. The likelihood of increasing the titre of anti-A or anti-B titres in the presence of A or B heterospecific pregnancies should also be considered.

#### External Cephalic Version in Breech Presentation.

N. A. BEISCHER and L. TOWNSEND (*J. Obstet. Gynec. Brit. Emp.*, August, 1960) review the effect of external cephalic version, performed during the antenatal period, upon the total incidence of breech delivery, the incidence of uncomplicated breech delivery and the incidence of complicated breech delivery. During the 12 months July, 1956, to June, 1957, the professional obstetric unit at the Royal Women's Hospital, Melbourne, adopted the policy of not attempting external cephalic version for breech presentations. External version was attempted in the other four units of the hospital for breech presentation at 34 (or more) weeks' gestation. The incidence of breech deliveries in the professional unit was 43 per 1000; in the other units it was 34, 32, 27 and 34 per 1000. This indicates a significant increase in the unit not performing version. The incidence of uncomplicated breech deliveries in the professional unit was 20 per 1000, whilst that of the other units combined was 9 per 1000 deliveries. The incidence of complicated breech delivery was similar in all units (about 22 per 1000 deliveries). This similarity is largely explained by the high percentage of breech patients with multiple pregnancy (41%), prematurity (17%) and accidental hemorrhage (6%). External cephalic version would not be attempted in the presence of these complications. The incidence of complicated breech delivery is therefore not reduced by external version. Also, the reduction in incidence of uncomplicated breech delivery is much more striking than is the reduction in the group as a whole, for the complicated group, in which the incidence was unaltered, comprised over 50% of all the breech deliveries in any of the units. The total number of external versions done by the five units during the year was 356, and 2 foetal deaths resulted from this procedure. The perinatal mortality rate for uncomplicated breech deliveries was 3.8%; the perinatal mortality in the series of complicated breech deliveries was 30.9% (prematurity alone accounting for 36 cases). The authors conclude that external cephalic version significantly reduced the total incidence of breech delivery and halved the incidence of uncomplicated breech delivery. There is no change in the incidence of complicated breech delivery. The procedure is recommended, as the risk to the fetus in an uncomplicated breech delivery is greater than the risk of version and a subsequent cephalic delivery.



## Points of View.

### MAN IN A VACUUM?

As the discovery of a relationship between the spirochæte and general paralysis of the insane—a disease with manifest "mental" sequelæ—bade fair to impede thought and progress in relation to psychopathology, so does it seem that, in some quarters today, the exciting discoveries in the fields of genetics, cellular chemistry, neuro-anatomy and neuro-physiology, etc., are causing men to concentrate on man as a fascinating and absorbing mechanism, host (in a mechanical sort of fashion) to electrolyte imbalances, ionic exchanges, peptic ulcers and lipofuscin.

Charles Morgan ("Liberties of the Mind", p. 37) has written, in another context, "... as Ruskin put it, ... it dehumanized the natural relationships of society and led men to think of one another as economic units". Would one be too far from the truth if "it" were taken to be intense and eager interest in the physical "substrate" of man, and "economic" were replaced by "physiological", "anatomical", "biochemical" or what you will? Whilst most thinkers would today probably agree that the behaviour of any animal must be associated with cellular activity, it seems worse than foolish to consider that because, in a sense, the cell and its contents may be regarded as "basic" in man's being, social influences may be ignored in the study of man.

Bertrand Russell ("Human Society in Ethics and Politics", p. 15) has stated: "We must therefore admit two distinct elements in human excellence, one social, the other solitary. An ethic which takes account only of the one, or only of the other, will be incomplete and unsatisfying." We might join issue with the learned philosopher in relation to his contention that the elements are "distinct", but could paraphrase the remainder of his statement to express our belief that any system of thought must be incomplete and unsatisfying unless it accepts that man's cells have relationships with more things and factors than those enclosed within his epidermis.

Man is a social being. This would seem to be a simple statement of self-evident fact, but one cannot help wondering, at times, if this be so, just how evident is self-evident?

This sort of question arose in my mind during the conference on post-graduate medical education in August, 1960, when it was pleasing to a psychiatrist's ear to hear many members of the profession speak of their belief in the importance of some knowledge and acceptance of "psychological medicine" as an essential part of all medical practice. However, whilst one accepts the integrity of those who spoke thus, there are times when one cannot but wonder whether this sort of thing is rather like singing in church or cheering with the crowd for, when discussion of "basic sciences" arises, it becomes clear that such a term is taken to comprehend only such subjects as biochemistry, physiology, anatomy, pathology and bacteriology. Recurrently one notes failure to suggest that subjects which seek to study man in his relationships with his broader environment, including the animate and emotional environment, should be included in the category "basic".

Yet is it not possible that the environment of the infant and child may play a profound and even dramatic part in the establishment of patterns of cellular activity in the individual—patterns which may be a not inconsiderable factor in determining the mode of reaction of the total person to trauma or disease?

Despite a self-congratulatory lip service to the concept of "total man", most of us pass through periods—longer or shorter—in which we find it hard to avoid considering man in terms of the old dichotomy. We somehow feel that "psychological factors" have a relevance only from the neck cephalad and meticulously avoid contemplation of the possibility that the environment in which the patient finds himself—and this environment includes us, his attendants—may well retard recovery from an operation, an acute medical condition or psychiatric disturbance.

It says much for man's resilience that many members of the human race can resume their usual life with their pristine competence and sense of humour after experience of the orderly, emasculating efficiency of hospital wards, and after being subjected to trial by ordeal in the form of an appearance as the central character of a drama in

which his own past, present and more or less predictable future are paraded before him and for the benefit of a student audience which is not always exhorted to remember the existence of human feelings. It is unfortunate that one has to note here that the term "student" does not refer only to the undergraduate level.

These things have all been said and written before, and one had hoped that there was now no further need to repeat them. It is with considerable disquiet that one realizes that it is probable that there will always be occasion to repeat, from time to time, a credo which professes an obligation to attempt to see man whole in all his dignity, as well as in his despair and degradation.

There is something passing strange in the statements of some who would seek to approach the study of man in a "strictly scientific" manner. It appears that there is a need to see scientific method and thinking as applicable only to the essentially "material"—to potassium levels, chromosome numbers, peritonitis and cholera. The relationship between a patient and his fellows, and especially the relationship between sufferers and their doctors, are seen as being in the realm of "philosophy", a realm in which the mind may wander pleasantly and which is sacrosanct, inviolate and unavailable for study. It is almost as though the scientific doctor hopes that there is a part of man's experience which can never be "sullied" by the vulgar inroads of scientific inquiry.

It would be a foolish person who would dispute the patent fact that there have been, through the ages of man's development (one hesitates to write "progress" in the light of the publication of "Parkinson's Law"), astute and kindly physicians who have helped their patients with more than mere technical skill, and yet who knew nothing—in any explicit way—of the psychological forces which contribute to attraction or repulsion between man and his neighbour. In view of the great importance, to mankind as a species and to medicine as part of man's service to man, of understanding, tolerance and cooperation, the time is surely upon us when all would do well to give some heed to those who assert that interpersonal relationships are both relevant to medicine as a whole and examinable. What claim can be made to the scientific accolade if a complete area of man's experience is deemed to be beyond the reach of the curious research worker?

"It is the genuinely scientific physician who says—and means it—that no two sick individuals are the same, and who treats the patient as well as the disease", according to Wendell Johnson ("People in Quandaries", p. 37). The same author has said that "... one can scarcely understand individual personalities except as one understands the social framework within which and by which their main characteristics are determined" (*ibid.*, p. 3), and many would now claim that, say, an orthopaedic surgeon is better equipped to treat a person with osteoarthritis of the hip if he can make some assessment of the "individual personality" of his patient and of himself.

Probably most people who have tried to find a path through the quicksands of interpersonal relationships have, at times, had an uneasy fear that the finding of a way (and this way may still not be quite firm) may well detract from the drama and struggle which help to give life its savour. Such fears are later seen to have been based on false premises. It is found that a deeper understanding of the origins of feelings within one's patients and within oneself can enrich relationships and permit of more abundant living. Such understanding is too, I believe, something which the undergraduate should be encouraged to approach. I submit that, at present, he is not likely, as his course proceeds, to see man clearly or to see him whole.

Charles Morgan ("Liberties of the Mind", p. 65) has said that "... it is liberty to know oneself; and by transcendence of knowledge to be oneself; and by penetration of being to lose oneself; and, in losing, find". Whilst this may smack of the obscurantist, it does, I believe, contain truth and has relevance to our broader subject—none of us lives in a vacuum, and man's reaction with man is a subject demanding study.

#### Acknowledgement.

I wish to record my gratitude to the Director, State Psychiatric Services, New South Wales, Dr. D. S. Fraser, for his permission to submit this paper for publication.

W. BRODIE GRANT, M.B., B.S., D.P.M.,

Deputy-Director of State Psychiatric Services, New South Wales.

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## On The Periphery.

## FULL MOON.

White moon,  
With sprinkled stars around you  
A curved dark shape beside you  
And a rainbow halo circling you,  
Like a chiffon scarf of beauty  
Floating in the blue-black midnight sky.  
Glaucoma.

ARTHUR D'OMBRAIN.

## Out of the Past.

## OPHTHALMIA.

[From "Ophthalmia", by James T. Rudall, published in a pamphlet "Summer Diseases" by the Australian Health Society, Melbourne, circa 1880.]

THE disease often begins with a feeling of dryness or soreness, of itching or smarting, and a sensation of grit or sand under the eyelids. Soon the affected eye looks red and perhaps swelled, and there is discharge of tears or mucous or puriform (matter-like) fluid from it. The eyelids are often gummed together on waking in the morning, and there is more or less incapability of bearing light, and indistinctness of sight. These symptoms need not be enlarged upon, as they are generally well known, but it may be said that early and copious discharge of matter together with swelling of the lids, especially if they are of a dusky red colour, indicate great severity of the affection. In another class of cases the discharge may be gushes of hot scalding tears, and the most prominent symptom, intolerance of light. In this form the cornea is mainly affected, and may soon become ulcerated. The two forms may be blended in various proportions, and as the remedies for the one typical form are not suited for the other, the appropriate treatment of a given case is sometimes a matter requiring no little discrimination even on the part of an ophthalmic practitioner. As a general rule we may say that when there is puriform discharge without intolerance of light or aching pain, topical astringents are required; but when there is much intolerance of light and aching, local sedatives or soothing remedies are needed.

As to the causes of ophthalmia, it would be nearly impossible to enumerate all of them. Almost every inflammation may arise from what is called "cold". But heat also would seem to be no uncommon source of the affection we are now considering, especially when that, as often happens, is associated with strong light and dust.

A cold wind, particularly in the form of draught, is a frequent cause of ophthalmia, and it is pretty certain that flies and other insects occasionally convey or supply some noxious material which sets up the disease. Several of these causes are not unfrequently combined, and we do not here attempt a complete list even of the exciting causes, or those which finally determine the onset of an attack. Persons who have not completely recovered from former inflammations of the eye are especially prone to recurrences of the same disease . . .

Ophthalmia is very often contagious, so generally indeed, that we should always take the precautions necessary to prevent it spreading in this way. Where only one eye is affected, its secretions or discharge, if allowed to come in contact with the sound eye, may set up the same kind of inflammation in it. It is well known that the use of the same sponges, towels, water for bathing and the like,

may communicate the disease to other persons. When ophthalmia arises in public schools, reformatories, or other institutions with numerous inmates, those affected should always be kept apart from the healthy. . .

But there is reason to believe, that even without contact in the ordinary sense of the term, the air itself may be the means of conveying the infective particles which set up the disease; therefore, an ample allowance of space for each individual, good ventilation, that is constant renewal of the air, and perhaps also the use of disinfectants, are essential.

## Correspondence.

## CLEFT LIP AND PALATE IN TASMANIA.

SIR: It is difficult to understand why Dr. Denis M. Clarke finds fault with the recommendation of Dr. B. K. Rank and Dr. J. A. Thomson that it is unwise to admit migrant families known to carry this trait into the Tasmanian community.

Surely the examination of emigrants in the country of their departure demands that the family history be considered. This is important for the purposes of immigration into any country, but particularly so in the case of Tasmania.

It is a small island with a small population, well off the sea lanes which might bring new blood easily. Family diseases are prominent, and intermarriage is rife.

I spent three years there as a Government Medical Officer, and although I have travelled and practised medicine in many parts of the world, I found the people of Tasmania unusual in their pathology both physical, mental and socially. The most striking diseases in my short experience were endemic poliomyelitis with early death in children, Huntington's chorea, goitre and cleft lip and palate. So frightening were these illnesses in the confined population that I would be in favour, not only of restricting immigration of any tainted family stock, but also of warning intending migrants of their presence. Certainly, Tasmania requires new stock in view of the intermarriage which exists, especially, for example, in areas which by their topography tend to be especially isolated. The area of Cygnet where I was a medical officer is a good example.

When, as Dr. Rank and Dr. Thomson have indicated, one in 600 children born alive suffers from cleft palate, that will mean an approximate ratio of one in 200 families with damaged stock, in this particular line of pathology alone. Most certainly migrants should be officially advised of this if the new stock is going to be of any value.

I would like to congratulate Dr. Rank and Dr. Thomson on their magnificent paper, and to endorse their recommendation on strict supervision of migration, especially for the sake of the migrant himself and of his or her children. The statistics contained in it are an indictment of any casual attitude to Tasmanian ethnology. When we consider Dr. Brothers's paper published many years ago on Huntington's chorea, we should realize the seriousness of family and endemic disease in this circumscribed population, with its limited choice of marriage partners.

Yours, etc.,

JOHN A. McCLUSKIE.

133 Wigram Road,  
Glebe, N.S.W.

November 21, 1960.

## POLIOMEYLITIS VACCINATION.

SIR: It is a wonder that your Journal has not been deluged by letters protesting to the recent "regulations" issued for the use of polio vaccine to doctors in general practice. Are we going to sit back and accept this too, as we have other impositions on our liberties as free agents in the past? Soon we will have to pay a fee to Councils to practise in their areas. A general practitioner isolated as I am must be prepared to give full service in his area, which now must include regular trips to Council to obtain supplies. What remuneration are we to receive for our efforts if a patient cannot, or rather will not, pay his doctor's fee? Indeed, what remuneration are we to receive for all this after-hours work that is to now be forced on us? The

greater part of my practice is home visits made necessary by great distances, lack of any off-peak transport and impracticability of mothers bringing large families to the doctor. The nucleus of the practice is also ten miles from the Council Chambers involved here. The arrangements imposed upon us are impossible and should be considered as such by the Minister of Health.

Dr. R. Naish (M.D. J. AUST., November 26, 1960) makes an outcry against medical fees; but it is just this type of imposition on the family doctor that forces him to increase his fees. I know and appreciate the embarrassment felt financially by patients caused by illness, but to give service to the public twenty-four hours a day costs the doctor money, and as the Government and Taxation Department give no quarter here, the only other avenue is patients' fees receivable. With rising costs and overdraft rates, increasing bad debts and overhead expenses and now further Government regulations, fees must go up.

Yours, etc.,

F. E. MUNRO.

Berowra,

New South Wales.

December 4, 1960.

#### ABSENCE OF UTERUS WITH POSSIBLE GENETIC DEFECT: REPORT OF TWO CASES.

SIR: The cases described by Dr. Alan A. Jones (M.D. J. AUST., October 22, 1960, page 663) and Dr. Phillip C. Thomas (M.D. J. AUST., November 26, 1960, page 874) appear to be examples of the feminine type of male pseudohermaphroditism described by Goldberg and Maxwell in 1948.<sup>1</sup>

According to Armstrong:<sup>2</sup>

This type of male pseudohermaphroditism is commonly mistaken for female, but should always be suspected in a female of adult age who has never menstruated, has no pubic hair and is without signs of hypopituitarism.

Valsh<sup>3</sup> reported the syndrome in three sisters, and remarked on the very strong family incidence of the condition. He states in his discussion of the syndrome:

The gonads are found in the abdomen, usually in the position of the ovaries, . . . [and] are found to be devoid of ovarian elements, but present the structure of immature, sterile, cryptorchid testes. . . . The nuclear sex is male.

Except for the absence of pubic and axillary hair, the appearance is that of a normal adult female. Sexual behaviour and psychological outlook are feminine.

Yours, etc.,

J. E. MEREDITH.

376 Brisbane Corso,

Yeronga,

Queensland.

December 1, 1960.

#### AN AUSTRALIAN MEDICAL ASSOCIATION.

SIR: Sir Henry Newland, in his letter (M.D. J. AUST., November 26, 1960), gives convincing reasons why the new medical association should be called The Medical Association of Australia.

Dr. F. M. Moore, in the same issue, favours the retention of the constitutional structure of the present British Medical Association in Australia. Influenced by experience of the working of that constitution in the critical years of the evolution of a national health policy from 1937 to the present day, I agree with him. Effective negotiation with the Government of the Commonwealth, involving day-to-day consultation between the Government and Association representatives and constructive adjustments of policy consistent with main principles predetermined by the Branches, is one of the high functions of such an Association. At times in that period, especially when faced with a recklessly hostile Government in 1944-1949, with fresh situations and onslaughts developing ever so frequently, as one of those charged with the heavy responsibility of leading the profession's cause I often felt anxiety, along with my colleagues, as to whether the machinery would permit the adoption of new united policies in time to meet

fresh threats. Early in that period it was evident that the mechanism for deciding the profession's policy was inadequate, and in 1944 at the Federal Council in Adelaide a resolution was drafted, readily agreed to by Federal and State Councils, which completed the structure by establishing that, when once the State Councils had determined on a matter and instructed their Federal Council delegates, the vote of the Federal Council on the subject became the Association's policy. The principles underlying this, which is indeed the basic democratic principle of federal constitutions generally, is not only sound, but is peculiarly appropriate to the geography of Australia. From then on it was a question of discovering whether this machinery would work. Work it did, and with what fruition we know. This was indeed one of the main reasons for the preservation of our freedom.

Further, it is a comparatively simple and inexpensive machinery, suited to the purposes of a profession, as in Australia, not numerically strong. It is, as I said, truly democratic. In that period certainly with which I am closely familiar, no important facet of medical opinion in Australia failed to be considered and evaluated in the Federal Council. The fact is that the true origin of policy is in the State Councils, and this is both democracy and also, so far as this applies to such an association, company law. And the State Councils are the natural bodies within the confines of their several States to perfect the most suitable measures by way of consultation with members for finding the consensus which becomes policy.

Why change this constitution, which worked admirably in a crisis? Why replace the simple State Council-Federal Council machinery with a complex State Council-General Assembly-Federal Council structure? Why a general assembly, essentially cumbersome to conduct, insupportably expensive to meet, and quite too inflexible for frequently recurring or prolonged negotiations with Government, which is what must be anticipated in the future as it was experienced in the past? At an estimate, one meeting of an assembly of 150 delegates would cost at least £6000.

The profession is still, it is hoped, a unity, not a composite of an increasing number of offshoots. If this is not right, then we have already begun to be disintegrated, so to become the prey of some ill-disposed Government of the future. The Colleges and all other professional bodies trusted the Federal Council in the threatening forties, leaving to that body exclusively the privilege and responsibility of presenting the profession's policy, secure in the belief that all vital principles would be held indispensable. Could any alternative arrangement be either more successful, more dignified or more elevating?

There are other heavy grounds for criticism of the proposed draft, but the foregoing goes to the core of the matter. Let there be The Medical Association of Australia, but let the thinking on its draft constitution be done again and differently.

Yours, etc.,

RONALD GRIEVE.

113 Homer Street,

Earlwood,

New South Wales.

December 6, 1960.

SIR: I do hope that considerable support will be forthcoming for the suggestion of Sir Henry Newland that the name for the nascent association be The Medical Association of Australia. I think the seven reasons he gives in his letter are most cogent, and should not be lightly brushed aside. It may be that the term "Australian Medical Association" comes more trippingly to the tongue, but we could soon become conditioned to the alternative suggestion of Sir Henry, with all the advantages mentioned by him.

Yours, etc.,

E. A. TIVEY.

5 Pearl Bay Avenue,

Mosman,

New South Wales.

December 1, 1960.

#### ORGANIZATION OF THE PROFESSION.

SIR: Your correspondence columns of November 26 mention two items of great and immediate importance to all medical practitioners. Dr. Shakespeare Cook reiterates a warning that "the Welfare State is on the way" and urges the formation of a national guild of all doctors. Mr. McKellar

<sup>1</sup> J. clin. Endocr., 1948, 8: 367.

<sup>2</sup> Brit. med. J., 1955, 1: 1173.

<sup>3</sup> Brit. med. J., 1958, 2: 1386.



proposes that the intended Medical Association of Australia (I use the name suggested by Sir Henry Newland deliberately) should have a representative assembly so composed as to represent all branches of our profession. Surely such a body, being free from any party political affiliation, would be an ideal one to conduct political negotiations with any government seeking to introduce a comprehensive national health scheme.

It may be regrettable that our profession should have to organize itself politically to meet the challenge of governmental direction; nevertheless it seems that this will be inevitable. It is probable that the bureaucrats, aided by our own human nature, will seek to divide and rule the profession by separate negotiation with its separate branches. To some extent, this has already happened in Victoria in the negotiations concerning the terms of appointment of salaried medical specialists.

There is an urgent need for a single united medical body to represent all types of practitioner. Let us hope that our indigenous medical association will be conceived adequate to the task and not allowed to be still-born because of sectional apathy or rivalry.

Yours, etc.,

BEN M. WADHAM.

Preston and Northcote  
Community Hospital,  
Bell Street,  
Preston, Victoria.  
November 30, 1960.

## Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE  
IN THE UNIVERSITY OF SYDNEY.

### PROGRAMME FOR 1961.

THE Post-Graduate Committee in Medicine in the University of Sydney announces the following programme of courses and activities for 1961:

#### Metropolitan and Week-End Courses.

The following metropolitan and week-end courses will be arranged: February 18-19, week-end course in the art of teaching; March 11-12, week-end course in neurology; March 18-19, week-end course in electrocardiography; April 5, 12, 19, 26, evening seminars in cardio-vascular diseases; April 15-16, week-end course in cardio-pulmonary diseases; May 8 to 19, general revision course; June 3-4, week-end course in the rheumatic diseases; June 17-18, week-end course in medical disasters; June-July, course in clinical respiratory physiology (two afternoons per week); July 5, 12, 19, 26, evening seminars in cardio-vascular diseases; July 7, course in management of cardiac arrest (limited to ten); July 8-9, week-end course in gastroenterology; July 24 to August 11, course in occupational medicine; July 29-30, week-end course in paediatrics; August 14 to 19, "Reunion Week", Royal North Shore Hospital; August 28 to September 1, course in gynaecology and obstetrics at The Women's Hospital, Crown Street; September 18 to 22, "Refresher Week" at Sydney Hospital; September 25 to 29, "Reunion Week" at St. Vincent's Hospital; October, "Reunion Week" at Royal Prince Alfred Hospital; October 7-8, week-end course in recent advances in cardio-vascular diseases; November 13 to 24, course in anaesthetics at Sydney Hospital.

Arrangements are in hand to include courses in the following subjects (details have still to be confirmed and will be announced at a later date): cancer detection for pathologists; cancer detection for general practitioners; liver diseases; isotopes; physical medicine; evening psychiatric demonstrations at Broughton Hall; psychological aspects of general practice; doctor-patient relationship.

#### Electrocardiographic Correspondence Course.

The Committee has completed arrangements with the School of Medicine, University of Southern California, whereby the Committee is distributing in Australia, New Zealand and the Pacific Islands the University's Basic Home Course in Electrocardiography. The course consists of 52 lessons. Each lesson is exemplified by E.C.G. tracings,

<sup>1</sup>Courses held in conjunction with other bodies. Dates to be confirmed.

together with "unknown" E.C.G.s, the interpretation of which is dealt with in subsequent lessons, which are mailed to subscribers regularly at the rate of one a week. The fee for the course is 40 guineas.

#### Resident and External Training Facilities.

**Anæsthetics.**—A limited number of post-graduate residencies is available for practical training in modern methods of anaesthetics at The Royal Newcastle Hospital. Fees, including board and residence, are £5 15s. 6d. per week of five days, Monday to Friday. A limited number of post-graduate residencies is also available at the Lewisham Hospital for a minimum period of three weeks. Fees, including board and residence, are £6 6s. per week of seven days. No resident facilities are available for women post-graduates at the Lewisham Hospital. A full-time course in anaesthetics, non-resident, will be conducted by the Department of Anaesthetics and Resuscitation, Sydney Hospital, for two weeks from November 13. The closing date will be June 30, and the course is limited to four candidates.

**Blood Grouping and Transfusion.**—On application to the Committee, instruction in the technique of blood grouping and transfusion can be arranged, free of charge, at the Red Cross Blood Transfusion Service or at The Royal Newcastle Hospital.

**Gynaecology and Obstetrics.**—Post-graduate residencies are available in gynaecology and obstetrics at The Women's Hospital, Crown Street, and at the Royal Hospital for Women, Paddington. Fees, including board and residence, are £5 15s. 6d. per week of seven days, and early enrolment with the Committee is essential.

**General Residencies.**—Post-graduate residencies are available for women graduates at the Racial Forster Hospital for Women and Children, Redfern. Fees, including board and residence, are £6 6s. per week of seven days.

**Pædiatric Residencies.**—Post-graduate residencies are available in paediatrics at The Royal Alexandra Hospital for Children, Camperdown. Fees, including board and residence, are £7 1s. 6d. per week of seven days, and early enrolment with the Committee is essential.

**External Studies.**—Arrangements can be made with due notice to meet the individual needs of medical practitioners requiring à-la-carte courses. Fees are £1 1s. per session attended, with a maximum fee of £3 3s. per week.

**Accommodation.**—Limited accommodation at The Royal Hospital for Women is available for post-graduates attending courses in Sydney. Board and residence amount to £2 12s. 6d. per week, and all applications should be directed to the Post-Graduate Committee.

**Post-Mortem Examinations.**—On application to the Committee, instruction in the technique of the performance of post-mortem examinations can be arranged free of charge.

#### Week-End Conferences, Country Centres.

The following dates and centres for week-end conferences are all subject to confirmation: April 22-23, Bathurst; April 22-23, Newcastle (gynaecology and obstetrics); April 29-30, Wagga Wagga; June 3-4, Tamworth; June 10-11, Broken Hill; June 24-25, Katoomba; July 1-2, Hornsby; July 15-16, Wollongong; August 12-13, Newcastle (medicine); September 23-24, Taree; September 23-24, Penrith; October 21-22, Parramatta; October 28-29, Newcastle (surgery); November 4-5, Young; November 11-12, Bega; November 18-19, Albury.

#### Diploma Courses.

The following diploma courses are being arranged to commence on the dates shown: January 9, advanced medicine (8 weeks); February, D.A. II (date and duration will be announced as soon as possible); March 6, advanced surgery (7 weeks); closing date February 3; March 13, D.D.R. I (4 months), D.T.R. I (4 months); May 8, D.D.M. I (12 weeks), basic medical sciences (12 weeks); closing date March 10; June 5, advanced medicine (11 weeks), D.P.M. I (8 months); July 3, D.C.P. Group I (7 months); July 17, D.P.M. II (7 months), D.D.R. II (8 months), D.T.R. II (8 months); August 7, D.D.M. II (7 months); August 28, D.A. I (11 weeks), D.G.O. I (11 weeks), D.L.O. I (11 weeks), D.O. I (11 weeks);

<sup>1</sup>Arranged by the N.S.W. State Committee, Royal Australasian College of Surgeons, in conjunction with the Department of Surgery in the University of Sydney.

<sup>2</sup>Arranged by the New South Wales State Committee, Royal Australasian College of Surgeons.

November 13, D.G.O. II (3 months), D.L.O. II (3 months), D.O. II (3 months).

#### Annual Subscription Course.

This course covers attendance at lectures by overseas lecturers and other specially arranged activities. The annual fee is £3 3s. from July 1, 1961. The fee for first and second year resident medical officers is £1 11s. 6d. A detailed diary card is printed at regular intervals throughout the year and posted to members. Occasionally last-minute alterations to meetings are necessary, and these are notified by advertisement in *The Sydney Morning Herald* ("Public Notices"), if possible on the day before the meeting.

#### OVERSEAS BUREAU

The Committee maintains an Overseas Bureau to assist medical practitioners proceeding abroad. A fee of £2 2s. is made for this service. Advice can be given concerning courses, accommodation, qualification for registration and other matters.

#### ANCILLARY EDUCATIONAL SERVICES

**Bulletin.**—The annual subscription to the Committee's monthly *Bulletin* is £2 2s.

**Film Lending Service.**—The New South Wales Film Council, 55 Market Street, Sydney, handles the Committee's film collection. Borrowers must first be registered with the Committee, after which they may apply direct for individual films to the Council. A film catalogue containing details and appraisals of medical films available may be purchased at a cost of £2 2s. from the Committee.

**Library Bulletin.**—The *Library Bulletin* of the Post-Graduate Medical School of London lists authors and titles of papers in some 360 journals in medicine and surgery and their specialties and basic medical sciences. The subscription is £3 3s. per annum.

**Lecture Recordings.**—Recorded lectures are available for loan, free of charge, to medical practitioners and groups.

**Tape Collection.**—A collection of tape recordings, especially directed towards the general practitioner, has been established through the courtesy of E. R. Squibb & Sons. These recordings are available for loan, free of all charges except postage.

#### TAXATION DEDUCTIONS

A deduction may be claimed in respect of fees paid for attendance on general practitioner courses held under the Committee's auspices when such fees are paid by practitioners who are in practice. Travelling expenses incurred in attending such courses may also be claimed as a deduction. When claiming, it will be necessary to quote "Taxation File No. AF/1865".

#### GENERAL

Dates of all courses should be confirmed with the Post-Graduate Committee, and further details regarding fees, diploma regulations and other information may be obtained on application to the Course Secretary, The Post-Graduate Committee in Medicine, Herford House, 188 Oxford Street, Paddington. Telephone: 31 0671.

### SCHOOL OF PUBLIC HEALTH AND TROPICAL MEDICINE, UNIVERSITY OF SYDNEY.

#### Diploma in Tropical Medicine and Hygiene.

A FULL-TIME COURSE for the Diploma in Tropical Medicine and Hygiene will commence on March 6, 1961, and will conclude with examinations which will terminate about the end of August. The main subjects studied are tropical medicine, tropical hygiene, bacteriology and pathology, protozoology, helminthology, entomology and elementary medical statistics. Practical demonstrations and instruction are also given in dermatology, ophthalmology and dentistry as related to residence in the tropics. No fees are payable for the course of instruction; a fee of £10 is charged for the diploma.

#### Diploma in Public Health.

A full-time course for the Diploma in Public Health will commence on March 6, 1961, and will conclude with examinations which will terminate about the end of November. The course is divided into two parts. Part I includes basic training in bacteriology, entomology and parasitology. Part II includes environmental hygiene and sanitation, epidemiology, occupational health, child health, vital statistics, and public health law and administration. A separate examination is held for each part, and candidates are required to pass the examination of Part I before admission

to that of Part II. No fees are payable for the course of instruction; a fee of £10 is charged for the diploma.

#### Enrolment.

Application for enrolment should be made to the Director of the School of Public Health and Tropical Medicine, University of Sydney.

## Medical Matters in Parliament.

### HOUSE OF REPRESENTATIVES.

THE following extracts from *Hansard* relate to the proceedings of the House of Representatives.

November 22, 1960.

#### Pharmaceutical Benefits Advisory Committee.

MR. WHITLAM asked the Minister for Health, upon notice:

1. Did he tell me on 30th August, in answer to a question which I placed on the notice-paper on 17th August, that the Pharmaceutical Benefits Advisory Committee had last met on 18th March last?

2. Did he tell me on 5th October, in answer to a question without notice, that the committee commenced to meet in March but had held a number of meetings since?

3. On what dates has the committee in fact met since 18th March last?

DR. DONALD CAMERON: The answers to the honorable member's questions are as follows:

1. Yes.

2 and 3. At the March meeting the committee decided to make extensive investigations regarding the matters before them and for this purpose informal communication took place between the members who reside in different States. Some members of the committee did meet from time to time, but there was no further formal meeting of the full committee until 4th November.

#### Therapeutic Substances Act.

MR. WHITLAM asked the Minister for Health, upon notice:

When will the July, 1960, edition of the "British Pharmaceutical Codex", be gazetted under the *Therapeutic Substances Act*?

DR. DONALD CAMERON: The answer to the honorable member's question is:

No day has yet been fixed.

November 23, 1960.

#### Charges at Canberra Community Hospital.

MR. J. R. FRASER asked the Minister for Health, upon notice:

1. Are charges to be effective as from the 1st February next at the Canberra Community Hospital equivalent to £15 8s. a week for public ward patients, £24 17s. a week for intermediate ward patients, and £33 5s. a week for private ward patients?

2. When this Government came to office in 1949 was treatment in public wards of the Canberra Community Hospital free of charge to patients?

3. Are the proposed intermediate ward charges more than 23 times the rates being charged in 1949?

4. Are the proposed private ward charges more than 11 times the rates being charged in 1949?

5. What are the reasons for these vast increases?

6. Why should hospital charges in the Australian Capital Territory be brought into line with those applying in New South Wales?

DR. DONALD CAMERON: The answers to the honorable member's questions are as follows:

1. Yes, except for patients in obstetric wards, in respect of whom the new charges will not become payable until 1st October, 1961.

2. Yes.

3. No. The charge for intermediate ward patients in 1949 was £3 3s. per week.

4. No. The charge for private ward patients in 1949 was £5 5s. per week.

5. Increases in charges have been made from time to time to help meet the greatly increasing cost of maintaining the hospital.

6. In fixing the charges a number of factors are taken into account, including the cost of maintaining patients in the hospital and the benefits available to patients under the Commonwealth's hospital insurance scheme. It has been decided that the proposed charges are the most appropriate under present circumstances.

## Notes and News.

### United Nations Conference on Energy Sources in Rome.

The United Nations Conference on New Sources of Energy, which will examine practical problems and experience in the utilization of solar energy, wind power and geothermal energy with special reference to the problems of the less developed countries, will be held at the invitation of the Italian Government in Rome from August 21 to 31, 1961. The Conference aims at bringing together experts in the fields of solar energy, wind power and geothermal energy, as well as people interested in energy development in general, to provide participants with up-to-date information on progress achieved, and to facilitate an exchange of views and experience relating to practical problems, potentialities and limitations in utilizing these three sources of energy, especially in areas lacking conventional energy sources or facing high energy costs.

Participants in the Conference, who will attend as individuals and not as representatives of governments, organizations or societies, will emphasize applications of these forms of energy rather than scientific principles or basic research. The Conference will give prominence to lines of action which have already led, or are about to lead, to commercial energy applications.

The agenda provides for two parallel series of technical discussions, one devoted basically to the utilization of geothermal energy, wind power and solar energy for power purposes, the other to solar energy for purposes other than power.

Participation at the Conference will be by invitation issued by the Secretary-General of the United Nations. Participants will be selected from among duly qualified persons who have been nominated to attend. Nominations will be made by governments of member States or their governmental services, by the United Nations and its specialized agencies and by interested non-governmental organizations or societies. It is contemplated that qualified individuals will also apply for participation, and their requests will receive particular attention. The United Nations has issued an information bulletin containing organizational arrangements for the Conference, including application forms for participation. The Secretary-General has appointed Mr. Alfred G. Katzin, of his office, to be Executive Secretary of the Conference. Those interested should address inquiries to the United Nations Information Centre for Australia and New Zealand, 44 Martin Place, Sydney.

### "Medicine, Science and the Law."

A new quarterly journal with the title *Medicine, Science and the Law* has been launched as the official journal of the British Academy of Forensic Sciences. The first issue appeared in November, 1960. The journal is stated to be "particularly directed to anaesthetists, biochemists, biologists, chemists, coroners, members of forensic science laboratories, lawyers, pathologists, police forces, police surgeons, prison medical officers, psychiatrists and zoologists", but it would be of interest to many others. It has a distinguished panel of editorial advisors and overseas correspondents. It is planned that each quarterly issue will consist of about 96 pages. The subscription is three guineas a year. The new journal may be obtained from the publishers, Sweet and Maxwell Limited, 11 New Fetter Lane, London, E.C.4.

### Abstracts of Japanese Medicine.

Japanese medical scientists have become prominent contributors to medicine, both in the clinical and, particularly, in the theoretical fields. The results of their work are reflected in some 500 current Japanese medical periodicals, which, in view of the language barrier, are not accessible to Western readers. As a solution to this problem the non-profit Excerpta Medica Foundation, aided by a grant from

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED NOVEMBER 19, 1960.<sup>1</sup>

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism .. ..	2(1)	..	9(5)	..	..	1(1)	..	..	12
Amoebiasis .. ..	..	..	..	..	..	..	..	..	..
Ancylostomiasis .. ..	2	..	1(1)	..	..	..	5	..	8
Anthrax .. ..	..	..	..	..	..	..	..	..	..
Bilharziasis .. ..	..	..	..	..	..	..	..	..	..
Brucellosis .. ..	..	2	..	..	..	1(1)	..	..	3
Cholera .. ..	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus) .. ..	..	..	..	..	..	..	..	..	..
Dengue .. ..	..	..	..	..	..	..	..	..	..
Diarrhoea (Infantile) .. ..	14(4)	11(11)	4(4)	..	1	..	1	..	31
Diphtheria .. ..	1	..	..	..	..	..	..	..	1
Dysentery (Bacillary) .. ..	..	4(4)	..	5(4)	1(1)	..	..	..	10
Encephalitis .. ..	..	1(1)	..	..	..	..	..	..	1
Filariasis .. ..	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice .. ..	..	..	..	..	..	..	..	..	..
Hydatid .. ..	..	1(1)	..	..	..	1	..	..	2
Infective Hepatitis .. ..	210(75)	90(54)	20(4)	52(30)	5(3)	11(10)	..	4	398
Lead Poisoning .. ..	..	..	..	..	..	..	..	..	..
Leprosy .. ..	..	..	..	..	..	..	..	..	..
Leptospirosis .. ..	..	..	..	..	..	..	..	..	..
Malaria .. ..	..	..	1	..	..	..	..	..	1
Meningococcal Infection .. ..	..	..	..	..	..	..	..	..	..
Ophthalmia .. ..	..	..	..	..	..	..	..	..	..
Ornithosis .. ..	..	..	..	..	..	..	..	..	..
Paratyphoid .. ..	..	..	..	..	..	1	..	..	1
Plague .. ..	..	..	..	..	..	..	..	..	..
Polioomyelitis .. ..	..	1(1)	..	..	..	6(4)	..	..	7
Puerperal Fever .. ..	6(2)	..	1	..	..	..	..	..	7
Rubella .. ..	..	27(10)	..	2(2)	8(7)	..	..	..	37
Salmonella Infection .. ..	..	..	..	5(5)	2(2)	..	..	..	7
Scarlet Fever .. ..	6(2)	20(18)	3	6(5)	1(1)	..	..	..	36
Smallpox .. ..	..	..	..	..	..	..	..	..	..
Tetanus .. ..	..	..	..	..	..	..	..	..	..
Trachoma .. ..	..	..	..	..	..	..	1	..	1
Trichinosis .. ..	..	..	..	..	..	..	..	..	..
Tuberculosis .. ..	47(22)	10(11)	20(9)	11(9)	4(3)	2(1)	2	..	105
Typhoid Fever .. ..	..	..	..	1(1)	..	..	..	..	1
Typhus (Flea-, Mite- and Tick-borne) .. ..	..	..	..	..	..	..	..	..	..
Typhus (Louse-borne) .. ..	..	..	..	..	..	..	..	..	..
Yellow Fever .. ..	..	..	..	..	..	..	..	..	..

<sup>1</sup> Figures in parentheses are those for the metropolitan area.



the U.S. Department of Health, Education and Welfare, has commenced a new monthly publication, *Abstracts of Japanese Medicine*, which contains, in the English language, an authoritative, over-all picture of Japanese progress in medicine in all its aspects.

Under the supervision of a Japanese Editorial Board, headed by Professor T. Yoshida, Dean of the University of Tokyo, the abstracts are selected from the weekly issues of the *Igaku Chuo Zasshi (Japanese Medical Abstracts)*. The abstracts and translations are prepared by medical specialists, and final editing and supervision are undertaken by the Japanese Editorial Board in cooperation with Excerpta Medica's own specialist staff of editors. The annual subscription rate is U.S.\$30.00. The same rate applies to Volume I, which comprises the period October, 1960 to December, 1961.

#### "Chemotherapia."

A new "international journal of pharmacology, toxicology, clinic and therapy" is being launched under the title *Chemotherapia*. Published by S. Karger, Basle, Switzerland, it will appear every two months. The annual subscription will be 56 Swiss francs.

### The World Medical Association.

#### Dr. Louis H. Bauer Appointed Consultant.

DR. LOUIS H. BAUER, Secretary-General of The World Medical Association since 1948, will become Consultant to that organization on January 1, 1961. Dr. Bauer has been closely associated with organized medicine since 1929. He is a Past President of the American Medical Association, the Aeromedical Association (now Aerospace Medical Association), the Nassau County Medical Society and the Medical Society of the State of New York. He is a consultant cardiologist to five hospitals in Nassau County, New York, consultant and former chairman of the Board of Directors, United Medical Service (New York's Blue Shield Plan), and a member of the New York State Public Health Council. He received an honorary degree of doctor of science from the University of Sydney, was the recipient of the Joseph Bancroft Medal (Queensland), and was awarded the Honorary Gold Key, Medical Faculty, University of Vienna, in 1955. He is an honorary flight surgeon of the French Air Force, and recently received the Paracelsus Medal, the highest honour awarded by the German Medical Association (*Deutsche Ärztag*).

Dr. Heinz Lord of Barnesville, Ohio, will succeed Dr. Bauer as Secretary-General of The World Medical Association.

#### Fifteenth General Assembly.

The Fifteenth General Assembly of The World Medical Association will be held in Rio de Janeiro, Brazil, on September 15 to 20, 1961.

### Nominations and Elections.

THE following have applied for election as members of the New South Wales Branch of the British Medical Association:

Kalokerinos, Archibedes, M.B., B.S., 1951 (Univ. Sydney), Collarenebri, N.S.W.

McGuire, Peter Neville, M.B., B.S., 1959 (Univ. Sydney), 1/95 Elouera Road, Cronulla.

Witkin, Saul Edgar, M.B., B.Ch., 1952 (Univ. Witwatersrand), c/o Bank of N.S.W., 341 George Street, Sydney.

Landecker, Kathrine Dorothy, M.B., B.S., 1959 (Univ. Sydney), Flat 701, 10 Wyld Street, Potts Point.

Taylor, Roger Bruce, M.B., B.S., 1959 (Univ. Sydney), 35 Gilroy Road, Turramurra.

Ramsay, Helen McGregor, M.B., B.S., 1952 (Univ. Sydney), 93 Wynter Street, Tarce.

The following has applied for election as a member of the South Australian Branch of the British Medical Association:

Sawicki, Thaddeus Johns, M.B., B.S., 1957 (Univ. Adelaide), 201 Bower Road, Ethelton.

The following have been elected members of the South Australian Branch of the British Medical Association:

Alpers, John Henry, M.B., B.S., 1959 (Univ. Adelaide); Hadley, Dunstan Leigh, M.B., Ch.B., 1950; Mestrov, Thomas John, M.B., B.S., 1958 (Univ. Adelaide).

### Diary for the Month.

DECEMBER 27.—Tasmanian Branch, B.M.A.: Southern Sub-division.

DECEMBER 29.—Tasmanian Branch, B.M.A.: Northern Sub-division.

1961.

JANUARY 10.—New South Wales Branch, B.M.A.: Quarterly Meeting of Council.

JANUARY 13.—Queensland Branch, B.M.A.: Council Meeting.

JANUARY 16.—Victorian Branch, B.M.A.: Finance Subcommittee.

### Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

*New South Wales Branch* (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

*South Australian Branch* (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

### Editorial Notices.

ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations, other than those normally used by the Journal, and not to underline either words or phrases.

Authors of papers are asked to state for inclusion in the title their principal qualifications as well as their relevant appointment and/or the unit, hospital or department from which the paper comes.

References to articles and books should be carefully checked. In a reference to an article in a journal the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of article. In a reference to a book the following information should be given: surname of author, initials of author, year of publication, full title of book, publisher, place of publication, page number (where relevant). The abbreviations used for the titles of journals are those of the list known as "World Medical Periodicals" (published by the World Medical Association). If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

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